ADDIS ABABA UNIVERSITY

COLLEGE OF BUSINESS AND ECONOMICS

DEPARTEMENT OF ECONOMICS

THE EFFECT OF FINANCIAL LIBERALIZATION ON ECONOMIC DEVELOPMENT IN ETHIOPIA

By:

MARKOS TAYE

THESIS SUPERVISOR

ATLAW.A (PhD)

JULY, 2023

ADDIS ABABA, ETHIOPIA

ADDIS ABABA UNIVERSITY

COLLEGE OF BUSINESS AND ECONOMICS

DEPARTEMENT OF ECONOMICS

THE EFFECT OF FINANCIAL LIBERALIZATION ON ECONOMIC DEVELOPMENT IN ETHIOPIA

By:

MARKOS TAYE

A THESIS SUBMITTED IN PARTIAL FULLFILMENT OF THE RECQUIREMENTS FOR THE AWARD OF THE DEGREE OF MASTER OF SCIENCE IN FINANCIAL ECONOMICS

Statement of Declaration

I, MarkosTayeZawde, hereby declare that this thesis entitled —The Effect of Financial Liberalization on Economic Development in Ethiopia is submitted by me for the award of the degree of Master of financial economics, Addis Ababa University at Addis Ababa, Ethiopia, is my original work and it has never been presented in any university. All sources and materials used for this thesis have been duly acknowledged.

Name: MarkosTayeZawde

Signature______________________

Place: Addis Ababa

Date of Submission: June 2023

This master thesis has been submitted for examination with my approval as thesis.

Advisor Name: AtlawAlemu (PhD)

Signature_______________________ Date___________________________

Addis Ababa University

School of Graduate Studies

This is to certify that the thesis entitled, ―The Effect of Financial Liberalization on Economic Development in Ethiopia was carried out by MarkosTayeZawde under the supervision of AtlawAlemu(PhD), submitted in partial fulfillment of the requirements for the degree of Master of Science in Financial economics complies with the regulations of the University and meets the accepted standards with respect to originality and quality.

Approved by:

Internal examiner: AtnafuGebremeskel (PhD)Signature_Date________________

External examiner: Migbaru(PhD)Signature __________Date________________

Advisor: AtlawAlemu (PhD ___________Signature___________Date_______________

ACKNOWLEDGEMENTS

First of all I would like to thank the almighty GOD for giving me the strength and ability to understand, learn and complete this study.

I would like to sincerely thank my advisor, AtlawAlemu (PhD), for his amazing leadership during my studies. My desire to learn more and produce high-caliber work was constantly sparked by his insightful comments and helpful ideas.

I would like to thank my mother, my father and all my family and friends for their support while doing this study.

Finally I am grateful to the staff of The NBE for their support in directing me in the right direction during the data gathering process.

Tables of content

Contents

List of tables

List of figures

List of Acronyms

CSA Central statics agency

CDR Credit-Deposit Ratio

LCDR Log of Credit-Deposit Ratio

FD Financial Depth

LFD Log of Financial Depth

FLI Financial Liberalization Index

GDP Gross Domestic product

RGDPReal GDP

LRGDP Log of Real GDP

RGDPP Real GDP per capital

RIR Real Interest Rate

SISGDP Share of Industrial Sector in Real GDP

LSISGDP Log of Share of Industrial Sector in Real GDP

APDBBAverage population Density per Bank Branch

BCSS Banks credit to selected sectors

RLR Real Lending Rate

SBCC Share of Banks credit to Cooperatives

LSBCC Log ofShare of Banks credit to Cooperatives

RTDReal Time Deposits

RVBT Real Total Volume of Bank Transaction

RPCVBTReal per capital volume of bank transaction

MOF Ministry of finance

NBE National Bank of Ethiopia

Abstract

The financial system is necessary for economic expansion. The financial system facilitates lending and borrowing of money, which fosters economic progress. The goal of the study is toevaluate the effects of the different financial liberalization initiatives using co-integration and causality tests on Ethiopia's financial and economic progress over the period of 1992-2022. In doing so, the ARDL approach to Co-integration and Error Correction Model were employed to investigate the long run and short run relationships.Accordingly results of this study suggest that commercial banks' real-time total deposits have a considerable influence on the loans they offer. On the other hand, the provision of credit by banks has a very positive effect on the expansion of the country's industrial development. The real loan rate has a significant influence in determining the contribution of the industrial sector to real GDP. The study also found that the credit deposit ratio of banks significantly influenced the growth of the industrial sector. The composite financial liberalization index is positively correlated with bank credit extensions, real GDP, and industrial development. The study's findings also indicate that the poorest segment of the population is not being helped by an increase of bank branches through the provision of financial resources.

Key words: Financial liberalization, Composite financial liberalization index

CHAPTER ONE

INTRODUCTION

1.1 Background of the study

The fragile and inefficient state-dominated and repressed financial sector was the main feature of many countries economy which was a major hindrance to economic growth. Such a move of governments are almost in all cases deliberated with in the two schools of thoughts regarding the possible benefits of financial reform aimed at financial liberalization: The first is the Goldsmith-McKinnon-Shaw school which argues financial liberalization is the only effective means to develop banking intermediation, to start again the capital accumulation and to promote the economic growth in the countries. (McKinnon, 1973) And (Shaw, 1973) come to present the misdeeds of financial repression and to defend the founded good of financial liberalization. The second is Keynes-Tobin-Stieglitz (also called the Structuralism and Neostructuralists School) propagated in favor of certain sort of financial repression due to economic benefits and vulnerability to persistent market failure. (Kahsay, 2014).Using various economic models, each provided background, rationale and intellectual justification for financial liberalization vis-a-vis financial repression (Ahmed & Islam, 2010).

In the 1960s and 1970s, especially in developing nations, government interference in the financial system including interest rate setting, the installation of high reserve requirements, and quantitative limits on loan allocation—was a fairly regular practice. Goldsmith (1969) was the first to criticize this technique, followed by McKinnon (1973) and Shaw (1973), who regarded it as the cause of low savings, credit restriction, and poor investment. The phrase "financial repression" was used. They expressed their opinions while criticizing the financial system, which was seen as the cause of the underwhelming performance of the financial sectors in the majority of emerging nations. Their Financial Repression Hypothesis theory contends, among other things, that regulated nominal interest rates interfere with resource allocation, undermine the efficiency of financial intermediation, and cause fragmented financial markets, dependence syndrome, and weak long-term growth in the majority of developing nations. Strongly controlled interest rates, state-influenced credit distribution, often changing reserve requirements, and highly regulated capital accounts are all indications of financial repression in countries (Wang & Huang, 2011).

Financial liberalization has been proposed as a cure to the ills of repression with a belief that it improves and enhances the efficiency of investment and eventually economic growth. Overall, financial liberalization has been broken down into three major reforms. This is the liberalization of the movement of capital, the opening of financial markets to international operators and deregulation in lending and deposit rates to increase interbank competition (Farhani,et al. 2015).

Likewise the Ethiopian government has initiated a series of adjustments to boost the effectiveness and competitiveness of the economy in an effort to hasten the process of economic growth. The government has been implementing reform measures to date, such as addressing the pervasive issue of nonperforming loans faced by state-owned banks, reconstituting the Development Bank of Ethiopia and converting the Construction and Business Bank to commercial banks, allowing domestic private investment in the banking sector, and passing a new banking act to give the National Bank of Ethiopia more autonomy. The major components of these changes in Ethiopia were primarily designed to increase consumer access, boost productivity, and promote competition. As the aforementioned reform measures have been taking place since 1994, in parallel the financial sector has been expanding substantially (Danbobi.D, 2020).

As a result assessing the impact that the liberalization that happened in the country so far has brought for the economic development of the country is important. Many studies have been done on these areas but until now specific impact of liberalization has been studied in relation to its impact on either growth or stability, while this research will assess the general impact that the liberalization has brought for economic development.In addition this paper will give due attention on to the potential long-term effects on sustainability and inclusive growth.

1.2 Statement of the problem

In the course of economic development, the financial system is crucial. Its main objective is to transfer limited resources from those who save to those who borrow for consumption and investment. The financial system supports economic expansion by making money accessible for lending and borrowing. The direct relationship between technical and financial advances and economic growth is evident, as major technological discoveries necessitate large investments that are funded by banks, finance, and insurance corporations. Until the 1980s, the financial systems of many emerging nations were heavily controlled. In order to make it simple for the government to obtain financial resources at a low cost, the government controlled interest rates, enforced credit limitations, owned banks and financial institutions, and created rules. The financial system was unable to mobilize the required money as a result of the highly restricted status of the financial sector and the associated interest rate distortions. Investment could not rise to the targeted level as a result. This prevented the economies of these developing nations from growing (Shrestha and Chowdhury, 2005)

Financial liberalization has concentrated on the dominant role of market forces in the financial sector of the economy since the introduction of McKinnon and Shaw's separate works in 1973, which emphasized the potential role of higher interest rates in mobilizing savings that could be put to productive use. It is one of the most contentious issues in the global economy. By granting the market more discretion over how to establish interest rates and allocate credit, this liberalization stands apart (Caprio et al., 1994). The growth in private savings brought by financial deregulation is far from certain, though. One clear and significant factor is the fact that the relationship between interest rates and savings is complicated because the income impact may cancel out the benefits of substitution.Increased household access to consumer credit or housing financing are two additional aspects of financial liberalization that might have the opposite effect of raising private savings (Muellbauer& Murphy, 1990), as well as Nair (2004) and Jappelli& Pagano (1994). According to Bandiera et al. (2000), there is no proof that the real interest rate has a beneficial impact on saving. The relationship was commonly negative.

This research aims to provide insight into the effects of financial liberalization on savings and investments, economic growth, industrial development, poverty alleviation and income redistribution, and financial stability.

According to findings by Achy, 2003; Akpan, 2004; Bascom, 1994; and Fowowe, 2004, there is a vast body of literature that has addressed this issue through cross-country or time series analysis. These studies have significant policy implications, particularly for developing nations that are understudied. Notably, Ethiopia has not been included in cross-country studies that have included certain sub-Saharan African nations. Prior studies on Ethiopia by Garedachew (2011) looked at the sequencing of financial liberalization qualitatively, while Kahsay (2014) concentrated on the impact of banking sector liberalization on economic growth. Both studies looked at the sequencing and timing processes and used the ADRL co-integration approach to evaluate performance indicators. Since no previous studies have been conducted in a complete set of frames to explain the impact of the change in policy variables this paper address this issue in more complete set than previous studies. As a result, this research is carried out from the standpoint of financial liberalization on growth, welfare, and stability in order to know the impact of the policy measures in a clear and detailed manner.

Therefore, the study attempted to assess the following fundamental research questions based on the previously mentioned context:

1.Does financial liberalization improves saving and investment?

2. Does financial liberalization improves economic Growth?

3. Does financial liberalization contribute tofinancial Stability?

4. Does financial liberalization improves social welfare of the society?

1.3 Objectives

1.3.1 General objective

The general objective of this research is to examine the effects of financial liberalization on economic development in Ethiopia.

1.3.2 Specific objectives

The specific objectives of the study are;-

1. To evaluate the impact of the financial liberalization on saving and investment.
2. To analyze the effect of financial liberalization on Economic Growth.
3. To assess the effect of financial liberalization on financial Stability.
4. To examine the effect of financial liberalization on social welfare of the society.

1.4 Research Hypotheses

As previously stated, the primary goal of this research is to investigate the impact of financial liberalization in Ethiopia on the national economy in general and the financial sector in particular. In this study, the following categories of hypotheses are examined in accordance with the structure described in the preceding section.

H1: Savingand investment in Ethiopia has been improved as a result of financial liberalization.

H2: Financial liberalization has speeded economic growth and industrial development.

H3: In Ethiopia, financial liberalization enhanced poverty reduction and income distribution.

H4: Ethiopia's financial stability has improved as a result of financial liberalization.

1.4 Significance of the study

Understanding of the degree to which financial liberalization affects a comprehensive collection of frameworks is critical for both policymakers and academics. The findings of this study are thought to contribute to the empirical basis required for appropriate comprehension of prior initiatives as well as management of the future phasing of the liberalization process. The study also adds to the body of knowledge by employing an acceptable method to financial liberalization index as a measure of the Ethiopian economy's financial sector advancement.

1.5 Scope of the study

This study's coverage and methodology is constrained. Its coverage is restricted to a review of the Ethiopian economy only. This is because of neither cross-sectional study nor case studies done in the past will not go within the present research scope. In terms of time it covers from 1992 to 2022 G.C, since the key variables considered in this study had data available throughout that time. Since some of the factors were not recorded as statistics by the nation, the data cannot extend more than these years.

1.6 Limitation of the study

Every research project might contain certain flaws. There are a few restrictions that come up while doing a preliminary search for data that have an impact on the study's activity. The primary impediment to solving the issue is that the researcher's first study lacked easily accessible data on the exact dates of deregulation of various policy variables. The financial liberalization index could not be constructed using policy variables like stock market creation and commercial bank privatization since they do not exist. Since their absence may be indirectly detected by the lack of variables, it is believed that this did not influence the results.

1.7Organization of the study

There are five chapters to this study. The study's background, research questions, objectives, and hypothesis are all covered in the first chapter, along with the study's significance, scope, and structure. The second chapter discusses ideas and theories pertinent to the subject topic. The theoretical literature is the initial component of the review of the literature, which is followed by a review of previous studies in the field and a discussion of the research gap. The study methodology, design, and model specification are all presented in the third chapter. The presentation, analysis, and interpretation of the data obtained are covered in the fourth chapter, and the last chapter summarizes the key results, conclusions, and suggestions.

CHAPTER TWO: REVIEW OF THEORETICAL LITERATURE AND EMPIRICAL EVIDENCE

2.1 Theoretical literature

The first chapter introduced the study's purpose, research hypothesis, and difficulty. In order to frame the study within the body of existing knowledge, the next section of this chapter covers both theoretical and empirical literature related to financial liberalization.

2.1.1 Role of financial liberalization for economic growth

The cost and size of loans are determined by the financial system. The state of the economy as a whole is greatly impacted by what occurs in this system. The overall amount spent on goods and services declines as financing becomes more costly and limited, and businesses reduce output and inventory. As a result, both unemployment and economic growth are increasing. Overall economic expenditure increases, more jobs are created, and economic growth quickens when credit costs are reduced and loanable funds are more freely available. Thoughts among academics on the importance of money in economic growth vary. In truth, there has been much discussion on the link between financial growth and economic advancement.

Three primary points of view have arisen in the literature about the potential contribution of finance to economic growth. According to the first frame of reference, finance is a crucial element of development. This perspective holds that the functions of the financial system are essential for development. According to the second point of view, growth is mostly unrelated to money. This point of view contends that as the economy's actual sectors expand so will the need for a variety of financial services, which the financial sector will provide. This hypothesis states that financial development naturally parallels economic expansion. The third viewpoint goes even further, asserting that the GDP may be negatively impacted by financial development.

Joseph Schumpeter claimed that financial intermediaries' services advance economic development by directing societal capital to the most innovative companies around the beginning of 1911

(Schumpeter 1934, p.103). Financial progress, according to Hicks (1969, pp. 144–145), was essential in igniting industrialisation in England. Long-term capital investment financing is required for the industrial revolution. Due to the development of financial markets that exchanged a range of securities and made liquid cash accessible for long-term investment, savings were encouraged to hold onto these assets. Without this liquidity transition, the industrial revolution "might not have happened" (Levine 1997, p.692). These ideas emphasize the contribution of the financial industry to economic growth.

However, a number of well-known economists believe that the role of finance in economic growth is rather insignificant. Robinson (1952) asserted that financial improvement often accompanies economic advancement. It seems to be the case, she says, "for the most part." Entrepreneurship is followed by finance (p. 20)." Similar to Lucas (1988, p. 6), who claims that the importance of financial problems is greatly exaggerated.His design of physical capital, human capital, and technology capital all contribute to economic progress. Change is the sole determinant of economic growth.

2.1.2 Financial repression

In the 1960s and 1970s, government intervention in the financial industry was pervasive, particularly in developing countries, and included interest rate adjustment, high reserve requirements, and numerical constraints on loan allocation. That method was attacked first by (Goldsmith, 1969), then by (McKinnon, 1973), and finally by (Shaw, 1973), who saw it as the source of low savings, credit rationing, and inadequate investment. They called it financial repression. It is the reverse of liberalizing financial characteristics. (McKinnon, 1973) defined financial repression as government financial policies that strictly manage interest rates, impose high reserve requirements on bank deposits, and compel resource allocation. Such repressive policies, which are common in developing countries, reduce financial depth and, as a result, the efficiency of the financial system; they impede economic advancement (McKinnon, 1973; Shaw, 1973).

Financial repression programs encompass loan subsidies for certain industries, strict banking regulation, and interest rate regulation. As a result, financing costs are artificially low, leading to non-market interest rates. As a result, interest rates don't serve as a means of balancing saving and investment decisions. According to Berthelemy and Varoudakis (1996), types of financial repression are any rules or regulations that prevent financial intermediaries from operating to their maximum technological capability. Interest rate controls and, in a strict sense, measures that end up resulting in negative real interest rates on deposits are usually connected with financial repression (Kitchen, 1986).

Financial repression, as described by (Giovannini& De Melo, 1993), also includes restrictions on foreign capital flows, as well as a fiscal dimension that connects financial repression to inflation taxation and seigniorage. Financial repression is caused by faulty fiscal and monetary policies, overregulation of the financial sector, other oppressive public sector activity, and excessive borrowing from the local financial system, potentially crowding out investors, according to (Serieux, 2008).

2.1.3 Rationale for repression

Governments utilize financial repression primarily to control budgetary resources (Giovannini& De Melo, 1993). These include controlling the amount of domestic debt, acquiring control of the money supply by means of direct monetary policy tools, lending to certain sectors, and maintaining the cost of borrowing in the economy low. Financial repression may be significant in terms of seignorage and inflationary tax profits. Especially when inflation is strong and monetary authorities use direct monetary policy tools (Giovannini& De Melo, 1993). Similarly, financial repression is associated with interest rates that are lower than market rates, reducing the costs of maintaining government debt (Roubini&Sala-i-Martin, 1992). Local banking institutions are essentially extorted by governments.

In addition to harsh legislative rules, the government may resort to more direct forms of repression, such as stringent reserve requirements for banks, forced ownership of government stock, and currency controls (Serieux, 2008). Historically, there was further support for financial repression since it had been possible to exercise authority over the supply of money through regulation and restrictions on the credit creation powers of the financial system. As a result, monetary authorities can use direct monetary management tools to restrict inflation, which benefits economic growth (Vittas, 1992).

2.1.4 Financial repression measures

The many forms of financial repression are caused by the various types of financial control. Authoritarian policies include any excessive financial regulation that hurts the economy. According to this methodology, Vitta (1992) proposes six categories of financial sector regulations that can result in distortions, in addition to a tax on financial intermediation activities. Examples of these include organizational, macroeconomic, protectionist, prudential, and structural controls. The controls are not mutually exclusive, it is crucial to remember this, since any one control measure might serve as one or more of the controls.

Banks typically lend to low-risk or high-risk projects with short payback periods in order to maximize profits. Unlike supporting efforts with high risk and long payback periods, such investments may assist the economy. As a result, the government may enforce policies such as obligatory reserve requirements, preference taxes, and credit restriction. Externalities caused by market failure are assumed to be compensated for by allocate control mechanisms. However, an excess of such operations may be constraining, as private investors are compelled to compete for scarce loans. As a result, many initiatives with higher revenues and/or higher total productivity are not completed.

Prudential, organizational, and protective controls are put in place to protect clients while also strengthening the financial system. Prudential controls, which include capitalization, management, risk management, and enforcing accounting norms, are intended to decrease the danger of systemic collapse. Protective controls, according to (Vittas, 1992), are procedures put in place to safeguard financial service clients from challenges induced by information asymmetries. Compensation funds and arbitration organizations may be among these measures. Organizational controls, on the other hand, try to fill the void left by externalities. This is aided by markets that include the stock exchange, other trade exchanges, payment clearing systems, and information networks. In order to increase market effectiveness, organizational controls promote market openness and information flow.

2.1.5 Financial liberalization

As a result of the financial repression strategy, several nations' economic performance fell even more.According to (Ahmed & Islam, 2010), the possible benefits of this financial liberalization reform process fall into two categories: The first is the Goldsmith-McKinnon-Shaw school, which believes that financial deregulation is the only effective approach to increase banking intermediation, resume capital accumulation, and promote national economic development. McKinnon, 1973 And have come to expose the wrongdoings of financial repression and to urge the proven good of financial freedom (Shaw, 1973). The Keynes-Tobin-Stiglitz School (also known as the Structural and Neostructural School) argued for financial regulation due to economic benefits and sensitivity to extended market failure.

According to Kaminsky&Schmukler (2001), there are typically three categories of financial liberalization. There is a stock market, capital account liberalization, and domestic financial liberalization. Their examination of financial liberalization takes into account domestic financial liberalization (deposit interest rates, lending interest rates), credit restrictions (credit allocation and control deletion), and growth of indirect monetary control.

2.2 Empirical literature

Laeven (2003) examines whether financial liberalization relieves companies' financial restrictions using panel data from a large number of enterprises in 13 developing nations. He discovers that liberalization has varied effects on small and large businesses. Small businesses are financially constrained before the liberalization process begins, but they become less so afterward. Large enterprises' financial limitations, on the other hand, are modest prior to financial liberalization but increase as it progresses. He hypothesizes that financial liberalization has a negative impact on large enterprises' funding limitations since these firms had easier access to preferentially directed lending prior to financial liberalization (2003, p. 5).

According to Bekaert et al. (2001), financial deregulation boosts economic development. They examine the consequences of liberalization using data from 95 countries from 1980 to 1997, adjusting for economic growth rates, GDP components, and the official financial liberalization index. Their findings suggest that over a five-year period, financial liberalization, as measured by stock market liberalization, adds to an increase of 1% in annual real per capita GDP growth. They claim that this increase is statistically significant. They find out that the ratio of investment to GDP increases and that foreign capital helps to finance some of the investment. According to Bekaert and Harvey's (2001) analysis, financial liberalization is responsible for 30% of the world's faster growth.

In their study on the impact of financial liberalization on economic growth in Sub-Saharan Africa, Nicholas et al. (2017) discovered a negative relationship between a banking crisis and economic growth, demonstrating that the period of a banking crisis can drastically affect economic growth in Sub-Saharan Africa. Given the critical role that most financial intermediaries play in developing nations, the findings have significance for several African countries, particularly those undertaking financial reform.

In their study on financial liberalization and economic growth, David et al. (2007) discovered that post-liberalization foreign portfolio investments had no positive influence on economic growth. Furthermore, greater post liberalization stock market turnover had a detrimental impact on economic development. In contrast, their research demonstrates that foreign portfolio investment and higher turnover contributed favorably to economic growth in a more restricted pre-1994 South African economy. They also demonstrated that capital account liberalization is required but not sufficient for economic growth. Instead, governments must establish and implement realistic macroeconomic policies to stabilize foreign capital flows in order to fully benefit from liberalization.

Ahmed (2013) examined the direct and indirect effects of financial liberalization policies on economic growth and financial deepening in the SSA region using a much more comprehensive and recent financial liberalization dataset. The paper's econometric findings indicate that, on average, financial liberalization is negatively related to income growth in the SSA area. His findings lend support to the skeptical empirical view of financial liberalization in emerging markets, indicating that liberalization may be associated with lower economic growth by causing destabilization, stimulating domestic capital flight, and increasing the risk of financial fragility.However, after adjusting for important macroeconomic characteristics such as institutional quality, fiscal imbalances, and inflation, the study indicates that financial liberalization has a beneficial influence on financial depth and resource mobilization in the SSA area. In fact, the study finds that nations with stronger legal structures, property rights protection, and more human capital have a bigger reform effect.

Babajide (2008) discovered that financial liberalization has a beneficial influence on economic growth in his study on Financial Liberalization Policies and Economic Growth Panel Data Evidence from Sub-Saharan Africa. The two financial liberalization indices, as well as a dummy variable to capture substantial steps toward liberalization, reveal a significant positive link between economic growth and financial liberalization. When we use various estimators, a different dependent variable, and divide the sample into fast- and slow-growing nations, the results remain robust.

In his study on financial sector liberalization in Ethiopia, Tefera (2016) discovered that financial sector liberalization in Ethiopia is quite low in contrast to certain surrounding countries, and the sector remains poor and underdeveloped. The majority of the country's population is unable to access banking services. Because of the unequal concentration of sectors in metropolitan regions, the bulk of the rural population has a severe lack of financial infrastructure and services. Based on the foregoing, it is determined that the reason for not liberalizing is neither solid nor trustworthy. And in his research on financial sector liberalization in Ethiopia, Robert M. (2007) discovered the closed character of Ethiopia's banking sector, indications of a non-competitive market structure, and tight capital restrictions. We also got the opportunity to assess the performance of Ethiopia's state-owned and private banks, noticing that state-owned banks were inefficient in comparison to private banks. The combination of Ethiopia's banking sector's closed features and its non-competitive market structure tends to impair the relationship between financial intermediation and economic growth, the relevance of which has been widely discussed in the literature.

In Teshager's (2021) study on the determinants of financial development in Ethiopia, he discovered that the road money supply model is favorably impacted by the political freedom index, economic growth, and trade openness in both the short and long run. While interest rates and reserve requirements have a negative impact. The real exchange rate has a negative long-run influence and a negligible short-run effect. In contrast, inflation, political freedom, economic development, and trade openness all have a favorable impact on loans to the private sector. External debt, reserve requirements, and lending interest rates all have a detrimental impact. The report suggests that the government increase commerce and the quality of factors of production, eliminate reserve requirements, lower lending interest rates, and engage in political reform.

Sime (2015) found that in the long term, financial liberalization policy has a positive and statistically significant influence on the growth of financial sectors in his study on the implications of the financial liberalization policy on the growth of financial sectors in Ethiopia. However, in the near term, it will have little effect on the development of the financial sector. The most promising financial liberalization policy is the comprehensive financial reform program. The study's policy consequence is that the Ethiopian government should accelerate the full liberalization of financial sectors in order to maximize the country's gains.

2.3 Overview of the Ethiopian economy

Ethiopia's economic growth has resulted in unusual changes in numerous political administrations. Following the regime transition, the prior regime's programs were implemented inconsistently.

Drought and famine are exacerbated by both internal and foreign warfare, as well as natural calamities.

We can identify four regimes in Ethiopia's modern political and economic history that each adopted a particular set of macroeconomic policies, which had an impact on the nation's macroeconomic growth performance. There are four periods: pre-1974 (monarchy rule), 1974-1991 (military dictatorship), 1992-2018 (the EPRDF regime) and 2018-present (prosperity party regime).Ethiopia's economic policies have been defined by a series of dramatic changes and setbacks. Prior to 1974, economic policy was mainly viewed as a market-oriented economic system. The years 1974-1991, on the other hand, were defined by a centralized and command-style economy. Since 1992, the EPRDF has formally rejected socialism and advocated for a market-based economic system.

According to the CSA, the majority of Ethiopia's population lives in rural regions, and agriculture accounts for 90% of exports and 41% of GDP. Ethiopia's real GDP growth rate has fluctuated throughout the years due to various calamities that have occurred in the nation. Every time a big natural disaster happens, such as the 1984 Wollo famine, the 1994 Green famine, or the 2002 Millennium famine, the economic impact of the drought is felt for years to come, as seen in the graph in (Figure 1) below.

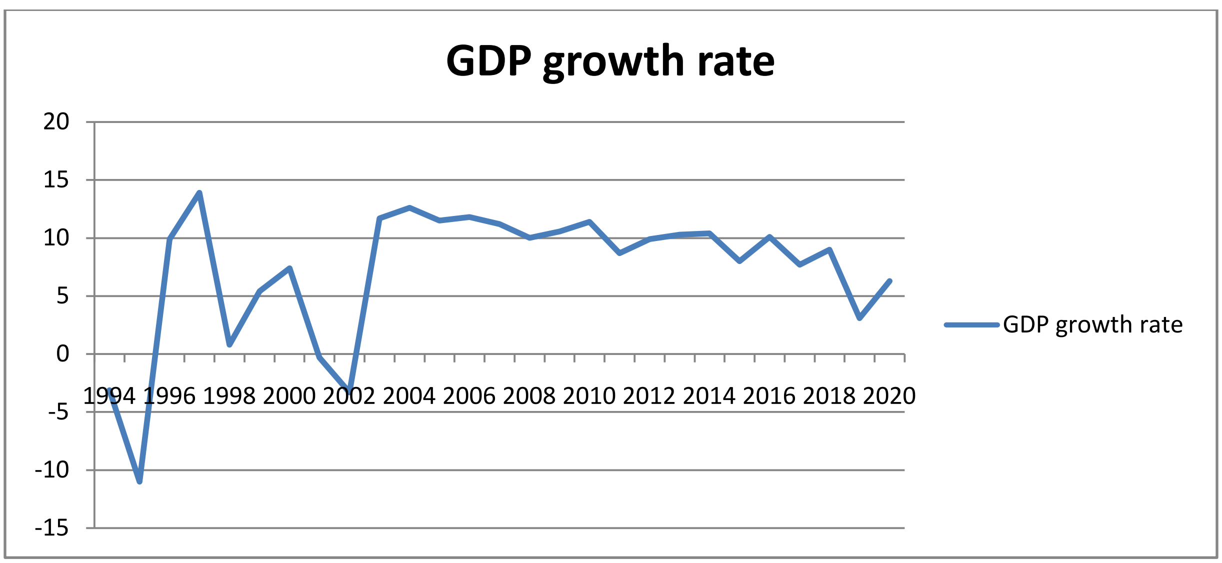


Figure1. Growth rate of real GDP

Source; NBE database

In 2020/21, the agricultural, industrial, and service sectors make up the GDP structure (EFY). The industry sector has been slowly growing over the past few years while the agricultural sector, which historically has made up the bulk of the economy, has been trending downward. Historically, the agricultural sector has contributed 45 percent of GDP to the overall economy.

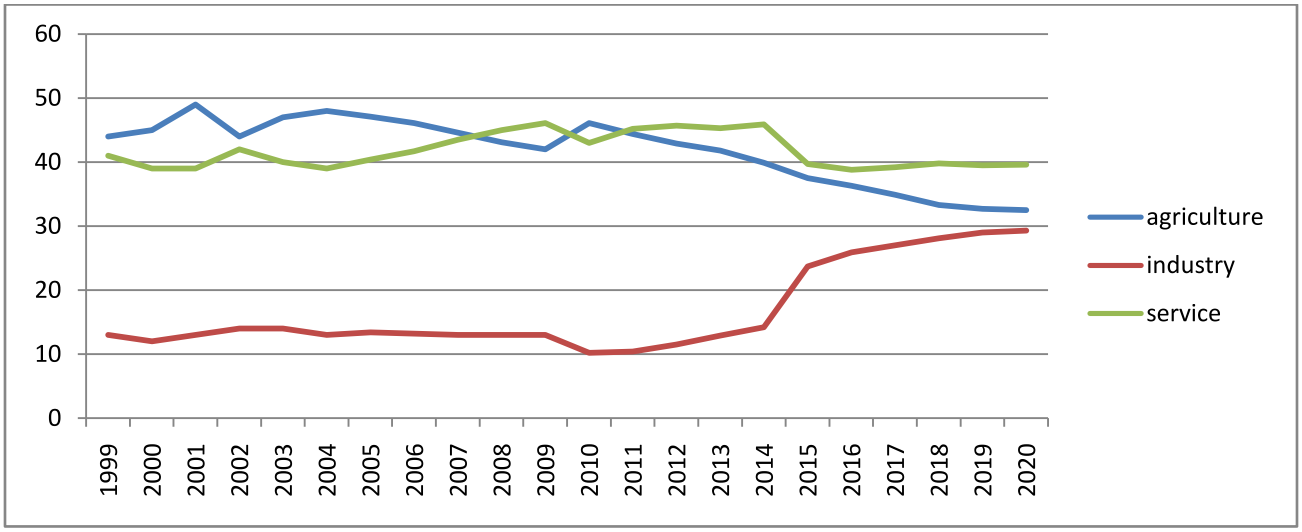


Figure 2: Structural contribution to GDP

Source: Survey from NBE

2.4 Overview of monetary policy of NBE

The main goals of the National Bank of Ethiopia's monetary policy are to support Ethiopia's sustainable economic growth and maintain price and exchange rate stability.

The following are more precise goals of Ethiopia's monetary policy:

- Establishing monetary, credit, and financial frameworks that encourage steady, balanced, and well-ordered economic expansion.
- Preserve the national currency's buying power by ensuring that changes in the macroeconomy are typically reflected in the level of the money supply and by intervening in the foreign exchange rate market to stabilize the rate when necessary.
- Promote effective allocation of savings for lucrative economic activity both locally and overseas by enacting a responsible, market-based interest rate policy;

- Promote the growth of financial and capital markets that can adjust to the needs of the economy by making the necessary policy changes. These actions would ensure the progressive adoption of trading instruments over the short term.

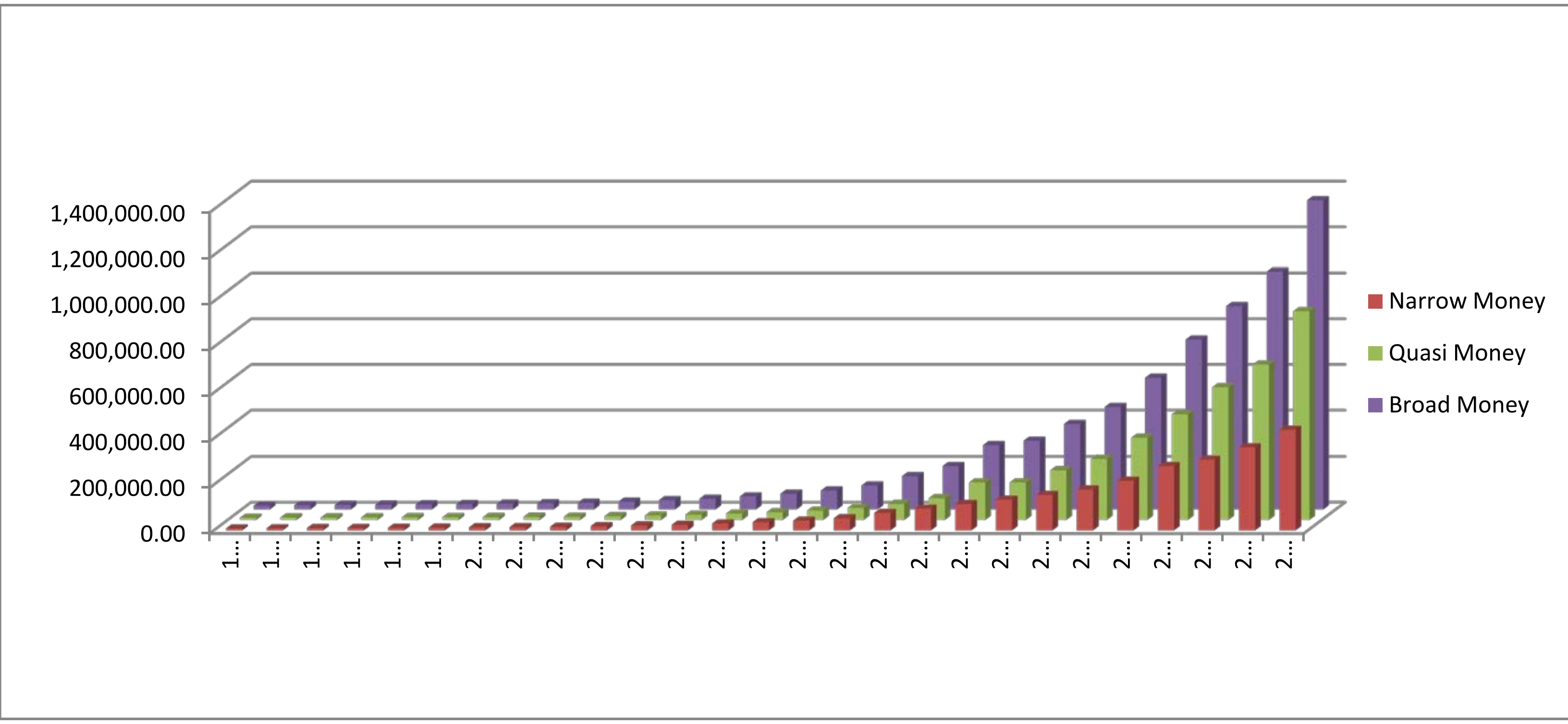


Figure 3:- Components of broad money

Source: - Authors computations from NBE data

2.5 Summary of review literature and research gap

We evaluated the studies on financial liberalization and its effects on the economy in this chapter. We found that opinions among experts on how finance affects economic growth vary. Three different viewpoints on the possible impact of finance on economic growth are presented in the literature. According to the first viewpoint, finance is a crucial part of development. According to the second frame of reference, growth is not much impacted by money. The third point of view contends that financial development could have a negative impact on growth.

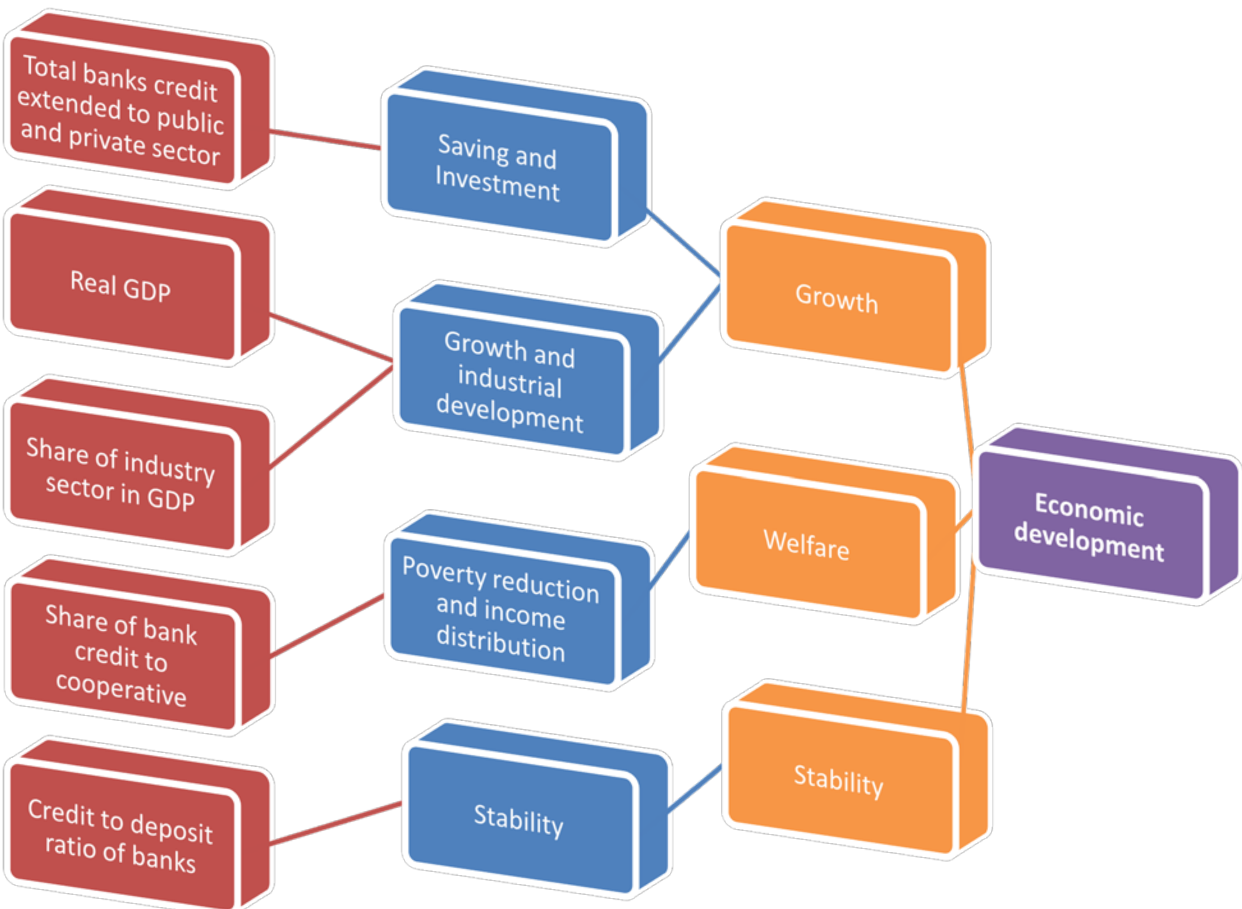
Financial deregulation's primary goals are to enhance supply and improve the use of investment capital. Entry obstacles to the banking sector are removed as part of the liberalization process, and the securities market is expanded. The expansion of the financial system and the bank-to-person ratio is aided by the admission of new banks into the market. In a similar vein, the expansion of the securities market boosts market liquidity and expands the amount of money available for longer-term investments. Real interest rates have risen in response to financial deregulation, which can expand lending options by luring more household cash into bank accounts. Empirical data, however, debunks this notion. The majority of empirical investigations have concluded that there is either no effect or a negative effect of interest rates on savings.

While several studies have only partially looked at different areas of financial liberalization, a review of the literature reveals that no thorough analysis of the policy's overall effects has been carried out. Most empirical studies focus on the growth-related features of financial liberalization rather than how the policy has affected financial stability. There is no empirical evidence in the literature about how the policy impacts income redistribution, despite the fact that several studies have highlighted theoretical arguments on this topic. The idea to conduct a thorough empirical study of the overall effects of financial liberalization measures was motivated by this kind of gap in the literature.

Some of the gaps noticed from the literature review are: First almost all paper uses simple methodology in which it is difficult to know the short run and the long run impact of financial liberalization on the development of financial sectors. Second, almost all of the researches conducted in effect of financial liberalization area focus on specific aim either growth only or other specific targets. So, from the reviewed researches the following main research gaps are identified: First identifying the most potential effects of financial liberalization on growth, welfare and stability's in Ethiopia context. Second analyzing the short run and the long run impact of the financial liberalization since it’s important to know the direct impact of financial liberalization for the development of the financial sectors.

2.6 Conceptual framework

DriversTransmissionOutcomeMechanisms



In order to get the specified outcomes and to know how the drivers identified above determine the outcome, the following mathematical model will be used as a framework. We need to consider the production function equation and introduce variables representing financial liberalization(Shrestha M. B., 2005).

1. Starting with the Cobb-Douglas production function:

$$Y = A * K^{\alpha} * L^{\beta}$$

Where: Y: Output

A: Total factor productivity (TFP)

K: Capital   L: Labor   α, β: Output elasticity of capital and labor, respectively

2. Introducing the financial liberalization variable. Let's call it FLI, which represents the level of financial liberalization in the economy using a composite financial liberalization index.
3. Assuming that financial liberalization affects inputs. Modifying the capital input in the production function incorporating the effect of financial liberalization:

$$K = K_O * FLI^{\theta}$$

Where: K_O Initial level of capital, θ: Elasticity of financial liberalization on capital input

4. Substitute the modified capital input equation (step 3) into the Cobb-Douglas production function (step 1):

$$Y = A * \left(K_O * FLI^{\theta}\right)^{\alpha} * L^{\beta}$$

5. Simplify the equation by applying properties of exponents:

$$Y = A * K_O{}^{\alpha} * FLI^{\theta\alpha} * L^{\beta}$$

6. We define a new total factor productivity (TFP) term incorporating the effect of financial liberalization:

$$A' = A * K_O{}^{\alpha} * L^{\beta}$$

Rewriting the equation in a final form: $Y = A' * FLI^{\theta\alpha}$

Therefore, the mathematical representation for the effect of financial liberalization on output via the Cobb-Douglas function is given by the equation $Y = A' * FLI^{\theta\alpha}$, where Y represents output, FL represents the level of financial liberalization, A' represents a modified TFP term, α and θ represent the elasticities of output with respect to capital and financial liberalization, respectively.

Expressing the above equation in logarithmic form gives

$$lnY = lnA' + \alpha\theta lnFLI$$

Differentiating the above logarithmic form, we will have a linear relationship

$$\frac{dY}{Y} = \alpha\beta\frac{dFLI}{FLI} + \frac{d\mathrm{A}'}{\mathrm{A}'}$$

From the above equation we can see the linear relationship between the financial liberalization and output and their relationship is determined and expressed in the econometric model part of the paper in the next chapter.

CHAPTER THREE: METHODOLOGY OF THE STUDY

This chapter goes through the process of estimating and establishing data characteristics for various modeling variables, as well as the many data sources and data analysis tools available. The chapter also discusses different conceptual challenges and critical assumptions relevant to a few data series chosen for the inquiry.

3.1 Research design

The major purpose of this research is to assess how financial liberalization has impacted Ethiopia's economy, welfare, and stability. This study employed the explanatory research technique to assess the hypothesis, which allows judgments regarding the relationship and causality between variables. Explanatory studies, as opposed to descriptive studies, aim to explain the reasons of the phenomena rather than simply perceiving and reporting the condition. The research employed a quantitative research approach to analyze the acquired estimations using time series data in order to better address the given goals and hypotheses.

3.2 Data source

In order to satisfy the study's aims, the data for the research is essentially secondary data. This study employed secondary data from the Ministry of Finance, National Bank, and Central Statistics Agency records spanning the country's window period 1992-2022. The time period is defined because it demonstrates the impact of major policy changes on the financial sectors, as well as because the country's financial system was fully centralized for the majority of the period prior to 1992, which is consistent with the sample period prior to the liberalization measure.

3.3Econometric model

Although the majority of the studies lacks a single, comprehensive framework to examine the overall effects of the financial liberalization program, (Shrestha M. B., 2005) came up with a method to gauge the policy's overall impact in his study, bridging the gap by suggesting an aggregated framework for examining the overall effects of financial liberalization. The framework is strong because it addresses the three fundamental economic factors of growth, welfare, and stability.

Making the framework of Shrestha M.B a bench mark a series of econometric models is discussed to answer all the questions of the research and address the objectives of the research. As such that enables us analyze the overall impact of liberalization policies on major development aspects of growth, stability and welfare as follows.

i. Financial liberalization effect on, saving and investment.

The correlation among interest rates, bank savings, and bank credits is examined in order to evaluate the hypothesis regarding the effect of financial liberalizations on interest rates, saving, and investment.

The following relationship is also examined to look at how interest rates affect investment.

$$\boldsymbol{LTBC_t = \alpha_1 + \alpha_2 LRTD_t + \alpha_3 RIR_t + \alpha_4 \mathrm{FLI}_t + e_t} \text{.................} \textbf{(3.2)}$$

Where,

LTBC = Log of Total Bank Credit

LRTD = log of Real Time Deposits

RIR= Real interest rate

FLI= Financial Liberalization Index

The coefficientsα_2 and α_4 are anticipated to have positive signs, whereas the coefficientα_3 is anticipated to have negative indications. The second component of the hypothesis H_2will not be rejected if the signs of α_2 and $\alpha_4$are positive while at the same time the sign of α_3 is negative.

ii. Financial liberalization effect on economic growth and industrial development

Increasing economic growth and industrial development is what the financial liberalization strategy is ultimately aiming to do. The issue of growth becomes essential for the long-term sustainable development of an agriculture-based economy, like that of Ethiopia.

The following equation is developed to analyze the effect of financial liberalization on economic growth:

$$\boldsymbol{LRGDP_t = \alpha_5 + \alpha_6 RIR_t + \alpha_7 LCDR_t + \alpha_8 FLI_t + e_t} \text{...} \textbf{(3.3)}$$

Where,

LRGDP= Log of Real gross domestic product

RIR= Real interest rate

FLI= Financial Liberalization Index

LCDR = Log of Credit Deposit Ratio

In the above equationα_6, α_7 and α_8 are anticipated to have positive values. Given that all of these coefficients have positive signs, the hypothesis H_3will not berejected.

To examine the effects of liberalization on industrial growth, the Ethiopian economy is divided into three sectors: (1) Agriculture, fishing, and related activities; (2) Industry; and (3) Services. The following connection has been estimated.

$$\mathbf{LSISGDP}_t = \alpha_9 + \alpha_{10} LTBC_t + \alpha_{11} RLR_t + \alpha_{12}\mathbf{FLI}_t + e_t \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ \mathbf{(3.4)}$$

LSISGDP =Log of Share of industry sector in GDP

RLR Log of real lending rate (The average lending rate minus the inflation rate)

To substantiate the second aspect of the hypothesis H2, the coefficients of LRTBC, RLR and FLI ($\alpha_{10}, \alpha_{11} and\ \alpha_{12}$) should not be negative.

iii. **Financial liberalization effect on poverty reduction and income distribution**.

The financial industry has the potential to reduce poverty by providing financial services to the population's poorer portions. Similar to this, because most urban people are rich and most rural dwellers are poor, transferring assets from metropolitan regions to promote investment in rural regions can aid in income redistribution.

In order to evaluate the impact of financial liberalization on income redistribution and poverty reduction, the following connection is looked at.

$$LS\mathbf{BCC}_t = \alpha_{13} + \alpha_{14} RIR_t + \alpha_{15} APDPBB_t + \alpha_{16}\mathbf{FLI}_t + e_t \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ \mathbf{(3.5)}$$

SBCC = Log of Share of the bank credit to cooperatives (credit of banks to the cooperatives)

APDPBB = Average population density per bank branch

In the above equation, α_{16} should both be positive whereas α_{15} should be negative. The sign in the case of α_{14} can be either positive or negative. The hypothesis H_3 is not rejected if coefficient$\alpha_5$is positive and α_{15} is negative.

iv. Financial liberalization effect on financial stability.

The disruptive consequences of the policy on both developing and industrialized countries show that financial liberalization is thought to be significantly predisposed to financial instability. In these countries, financial liberalization has often been accompanied by a currency and banking crisis. These crises have been brought on by escalating rivalry, declining incomes, freedom to take high risk, simple access to risky resources, resource misallocation, unfavorable capital movement, moral hazard concerns, and rising exchange rate volatility.

Reduced government capital spending might potentially have a detrimental effect on the economy's infrastructure and impede economic expansion. The rationale is that public infrastructure may supplement private investment and boost its economic efficiency (Harvey and Kearney 1994; Aschaurer 1989).

$$\mathbf{LCDRB}_{\boldsymbol{t}} = \boldsymbol{\alpha_{17}} + \boldsymbol{\alpha_{18}} \boldsymbol{RLR_t} + \boldsymbol{\alpha_{19}} \boldsymbol{LFD_t} + \boldsymbol{\alpha_{20}} \mathbf{FLI}_{\boldsymbol{t}} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \mathbf{(3.6)}$$

LCDRB = Log of Credit-deposit ratio of banks

LFD = Log of Financial depth(Ratio of total bank deposit liabilities divided by nominal gross domestic product)

To validate the hypothesis H4, the coefficients of RLR, FLI, and LFD must all be positive, whereas the coefficient of LFD must be negative.

3.4 Estimation method

The study used the Autoregressive Distributed Lag (ARDL) Model to examine the long-term connection between the dependent variable and the independent variable. Pesaran and Shin, in 1997 and 1999 make the suggestion to look at the possibility of a co-integration connection between the variables. Compared to co-integration methods using Johansen maximum likelihood (1988), this technique offers the following advantages: First, it circumvents the issue of the integration order regardless of I (0) or I (1). Second, it is appropriate for small sample size studies, in contrast to

Johansen co-integration, which is applicable for high sample sizes (Pesaran et al, 2001). Thirdly, even when parts of the regressors are endogenous, it still offers accurate t-statistics and unbiased estimates of the long run model (Harris &Sollis, 2003).

Using the proper lag-length selection criterion, the ARDL model mentioned in the equation is evaluated. For the yearly data, a maximum of two lag durations are advised, according to (Pesaran& Shin, 1999), as quoted in (Narayan, 2004). A lag duration that minimizes AIC is then chosen as a result. Additionally, as AIC is a superior option for data with lower sample sizes like those in our study, we employed it to identify the ideal latency. AIC is also shown to have the lowest chance of underestimating among all relevant criteria (Liew&Khimsen, 2004.

CHAPTER FOUR: DATA ANALAYSIS AND INTERPRETATION

This chapter coversthe construction of the financial liberalization index; unit root test results, long run and short run co-integrations, causality test, and interpretation of the studied data.

4.1 Financial Liberalization Index

To track the progress of Ethiopia's financial liberalization process over time, the Financial Liberalization Index was developed. Financial liberalization is a process that involves a number of adjustments, updates to current regulations, and the adoption of new regulations as needed to support a country's open economy. Therefore, it is not a temporary implementation. The technique put forward and employed by (Bandiera, Caprio et al. (2000), Laeven (2003), (Shrestha M. B. (2005), and Paude (2007) was used to develop the composite financial liberalization index for Ethiopia. The FLI for Ethiopia was built using the main pillars of financial liberalization policy in this study. An eigenvalue was produced using principal component analysis to represent each financial liberalization policy component.

The analysis of Ethiopia's financial sector changes examines six major financial liberalization initiatives that shaped the process from 1992 to 2022. These elements include the following: (1) interest rate deregulation (IRD), (2) entry barrier removal (REB), (3) reserve requirement reduction (RRR), (4) easing of credit controls (ECC), (5) implementation of prudential rules (IPR), and (6) external account liberalization (EAL).The progress of financial liberalization as measured by the composite financial liberalization index was captured using the principal component analysis method (Shrestha M. B., 2005). Even though the initial principal component included stock market liberalization and the privatization of state-owned banks, due to the absence of action in the policy variables throughout the research period, these two components have been excluded.

Each of the financial liberalization policy factors will be assigned an arbitrary value in order to calculate the financial liberalization index for Ethiopia. In accordance with the government's policy decisions made on the six policy variables during the research period, each policy variable is going to have a value that will range from 0 to 1. This policy variable's value will be 1 when a given industry is fully liberalized and 0 when it is still under restriction. In order to illustrate the condition of the partial and phase-wise ongoing liberalization of a particular sector, partial values of 0.33, 0.50, and 0.66 will be assigned. A score of 0.50 indicates the first stages of partial deregulation in a two-phased deregulation process, whereas values of 0.33 and 0.66, respectively, signal the first and second phases in a three-phased deregulation process.

To calculate the financial liberalization index, the policy components and the indicators used are

Table 4 .1 Policy component and indicators

S.N	Policy components	Indicators
1	Interest Rate Deregulation (IRD)	Interest Rates (deposit, lending)
2	Removal of Entry Barriers (RER)	Population density per bank branch
3	Reserve Requirement (RR)	Required liquidity requirement and cash reserve requirement rate
4	Easing in Credit Controls (ECC)	Bank credit to private sector vis-avisthepublic sector
5	External Account Liberalization (EAL)	Foreign direct investment and balance ofpayments statistics
6	Implementation of Prudential Rules (IPR)	None

Source: (M. B. Shrestha., 2005)

Table 4.2 Policy Variables for financial liberalization index

Year	IRD	REB	RRR	EAL	IPR	ECC
1992	0	0	0	0	0	1
1993	0	0	0	0.33	0	1
1994	0	0.5	0	0.33	1	1
1995	0	0.5	1	0.33	1	1
1996	0	0.5	1	0.33	1	1

1997	0	0.5	1	0.33	1	1
1998	0.66	0.5	1	0.66	1	1
1999	0.66	0.5	1	0.66	1	1
2000	0.66	0.5	1	0.66	1	1
2001	0.66	0.5	1	0.66	1	1
2002	0.66	0.5	1	0.66	1	1
2003	0.66	0.5	1	0.66	1	1
2004	0.66	0.5	1	0.66	1	1
2005	0.66	0.5	1	0.66	1	1
2006	0.66	0.5	1	0.66	1	1
2007	0.66	0.5	0.5	0.66	1	1
2008	0.66	0.5	0.5	0.66	1	1
2009	0.66	0.5	0.5	0.66	1	1
2010	0.66	0.5	0.5	0.66	1	1
2011	0.66	0.5	0.5	0.66	1	1
2012	0.66	0.5	0.5	0.66	1	1
2013	0.66	0.5	1	0.66	1	1
2014	0.66	0.5	1	0.66	1	1
2015	0.66	0.5	1	0.66	1	1
2016	0.66	0.5	1	0.66	1	1
2017	0.66	0.5	1	0.66	1	1
2018	0.66	0.5	1	0.66	1	1
2019	0.66	0.5	1	0.66	1	1
2020	0.66	0.5	1	0.66	1	1
2021	0.66	0.5	0.5	0.66	1	1
2022	0.66	0.5	1	0.66	1	1

The financial liberalization index (FLI) for Ethiopia is generated from the values shown in Table 4.2. In order to do this, the primary component method is used to determine the weight of each component. The following terms can be used to describe the FLI's composition:

$$FLI_t = w_i IRD_t + w_i \mathrm{ECC}_t + w_i \mathrm{RRR}_t + w_i \mathrm{REB}_t + w_i \mathrm{IPR}_t + w_i EAL_t \ldots\ldots (4.1)$$

Where $\boldsymbol{w_i}$ is the weight of the component supplied by the significant eigenvector of the specified principal component.

Table 4.3 Eigen value and Eigen vectors of the policy variables

Principal components (Eigenvectors)				
Variable	Comp 1	Comp 2	Comp 3	Comp 4
IRD	0.3725	0.6899	0.1015	-0.0954
REB	0.4496	-0.2995	-0.0409	-0.4544
RRR	0.3491	-0.2450	0.7928	0.4355
EAL	0.4377	0.4590	-0.1290	0.1421
IPR	0.4496	-0.2995	-0.0409	-0.4544
ECC	0.3789	-0.2719	-0.5842	0.6067

Source: Author's Computation of the STATA result

Using the six policy variables' first principal component (Comp 1), this accounts for 69.7% of the total variance, and substituting the corresponding eigenvalues in equation (4.1),

$$\mathrm{FLI_t} = 0.3725\mathrm{IRD_t} + 0.378\mathrm{ECC_t} + 0.349\mathrm{RRR_t} + 0.449\mathrm{REB_t} + 0.449\mathrm{IPR_t}$$

$$+0.437EAL_t \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (4.2)$$

The calculated total and individual composite financial liberalization indices are shown in Table 4.4.

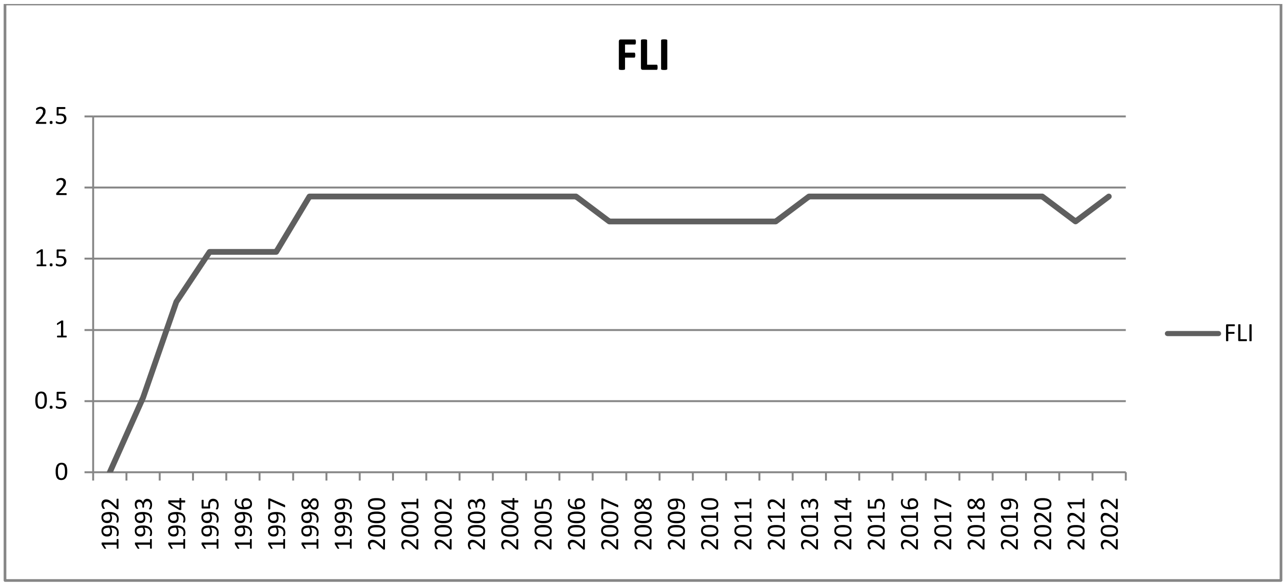
Table 4.4 Composite financial liberalization index for Ethiopia

Year	IRD	REB	RRR	EAL	IPR	ECC	FLI
1992	0	0	0	0	0	0	0
1993	0	0	0	0.144441	0	0.3789	0.523341
1994	0	0.2248	0	0.144441	0.4496	0.3789	1.197741
1995	0	0.2248	0.3491	0.144441	0.4496	0.3789	1.546841
1996	0	0.2248	0.3491	0.144441	0.4496	0.3789	1.546841
1997	0	0.2248	0.3491	0.144441	0.4496	0.3789	1.546841
1998	0.24585	0.2248	0.3491	0.288882	0.4496	0.3789	1.937132
1999	0.24585	0.2248	0.3491	0.288882	0.4496	0.3789	1.937132
2000	0.24585	0.2248	0.3491	0.288882	0.4496	0.3789	1.937132
2001	0.24585	0.2248	0.3491	0.288882	0.4496	0.3789	1.937132

2002	**0.24585**	**0.2248**	**0.3491**	**0.288882**	**0.4496**	**0.3789**	**1.937132**
2003	**0.24585**	**0.2248**	**0.3491**	**0.288882**	**0.4496**	**0.3789**	**1.937132**
2004	**0.24585**	**0.2248**	**0.3491**	**0.288882**	**0.4496**	**0.3789**	**1.937132**
2005	**0.24585**	**0.2248**	**0.3491**	**0.288882**	**0.4496**	**0.3789**	**1.937132**
2006	**0.24585**	**0.2248**	**0.3491**	**0.288882**	**0.4496**	**0.3789**	**1.937132**
2007	**0.24585**	**0.2248**	**0.17455**	**0.288882**	**0.4496**	**0.3789**	**1.762582**
2008	**0.24585**	**0.2248**	**0.17455**	**0.288882**	**0.4496**	**0.3789**	**1.762582**
2009	**0.24585**	**0.2248**	**0.17455**	**0.288882**	**0.4496**	**0.3789**	**1.762582**
2010	**0.24585**	**0.2248**	**0.17455**	**0.288882**	**0.4496**	**0.3789**	**1.762582**
2011	**0.24585**	**0.2248**	**0.17455**	**0.288882**	**0.4496**	**0.3789**	**1.762582**
2012	**0.24585**	**0.2248**	**0.17455**	**0.288882**	**0.4496**	**0.3789**	**1.762582**
2013	**0.24585**	**0.2248**	**0.3491**	**0.288882**	**0.4496**	**0.3789**	**1.937132**
2014	**0.24585**	**0.2248**	**0.3491**	**0.288882**	**0.4496**	**0.3789**	**1.937132**
2015	**0.24585**	**0.2248**	**0.3491**	**0.288882**	**0.4496**	**0.3789**	**1.937132**
2016	**0.24585**	**0.2248**	**0.3491**	**0.288882**	**0.4496**	**0.3789**	**1.937132**
2017	**0.24585**	**0.2248**	**0.3491**	**0.288882**	**0.4496**	**0.3789**	**1.937132**
2018	**0.24585**	**0.2248**	**0.3491**	**0.288882**	**0.4496**	**0.3789**	**1.937132**
2019	**0.24585**	**0.2248**	**0.3491**	**0.288882**	**0.4496**	**0.3789**	**1.937132**
2020	**0.24585**	**0.2248**	**0.3491**	**0.288882**	**0.4496**	**0.3789**	**1.937132**
2021	**0.24585**	**0.2248**	**0.17455**	**0.288882**	**0.4496**	**0.3789**	**1.762582**
2022	**0.24585**	**0.2248**	**0.3491**	**0.288882**	**0.4496**	**0.3789**	**1.937132**

Figure 4.1Financial liberalization index (FLI)

The figure below shows the financial liberalization index (FLI) for Ethiopia, which is displayed in the final column of the previous table.



Source: Author computation of STATA results

4.2 Unit root test

Implementing the standard Augmented Dickey-Fuller (ADF), a unit root test is performed to ascertain the level of integration. Additionally, while using the ARDL model, none of the variables entered for the regression should be integrated to order two. Before taking any type of action, a unit root test is performed to verify these criteria. In order to make the decision to use the ARDL model, the unit root test can be useful for determining if the ARDL model should be applied. Table 4.5's result demonstrates that there is a combination of I(0) and I(1) but no order two.

Table 4.5 Unit root test results

Augmented Dickey-Fuller test							
No.	Variable	With intercept			With intercept and trend		
		At level	At 1st difference	Order of	At level	At 1st difference	Order of
1.	LTBC	N	S	I(1) at 1%	N	S	I(1) at 1%
2.	LTBD	N	S	I(1) at 1%	N	S	I(1) at 1%
3.	LRGDP	N	S	I(1) at 1%	N	S	I(1) at 1%

4.	LSBCTC	S	S	I(0) at 1%	S	S	I(0) at 1%
5.	LSIGDP	S	S	I(0) at 1%	S	S	I(0) at 1%
6.	RIR	S	S	I(0) at 1%	S	S	I(0) at 1%
7.	RLR	S	S	I(0) at 1%	S	S	I(0) at 1%
8.	RDR	S	S	I(0) at 1%	S	S	I(0) at 1%
9.	LFD	N	S	I(1) at 1%	N	S	I(1) at 1%
10	APDPBB	N	S	I(1) at 1%	N	S	I(1) at 1%
11.	LCDR	N	S	I(1) at 1%	N	S	I(1) at 1%
12.	FLI	S	S	I(0) at 1%	S	S	I(0) at 1%

Source: Author computation of STATA results

We can figure out from the above table that none of the variables included in are of order 2, which is undesirable when using the ARDL model. As a result, the ARDL co-integration methodology proposed by Pesaran et al. (2001) is the best strategy for estimating or examining the long-term relation that exists between the variables.

4.3 Diagnostic tests

Some diagnostic tests are carried out to see if the projected long term model can be verified. Prior to doing any study, it is necessary to verify the model's baseline characteristics. In this work, a variety of model stability and diagnostic checks are performed, including the Brush &Godfray LM test for serial correlation, the Jaque-Bera test for normality, and the hetroscedasticity test. The stability of long run estimates has also been examined using CUSUM tests, in addition to the diagnostic tests mentioned above.

The diagnostic test, summary of the model, and raw regression results are included in Appendix C of the study. All the findings show that they pass the basic diagnostic test as well as the stability test.

4.4 Co-integration and ARDL Approach

The link among variables in long-run equilibrium is known as co-integration. According to the economic interpretation of co-integration, if two or more variables are connected to produce a relationship that is in equilibrium over the long run, even though the series themselves could veer from equilibrium in the short run, they will come closer together in the long run (Harris and Sollis 2003, p. 34).

A variety of methods may be used to conduct the co-integration test. The methods that are most often used include the maximum likelihood-based, as well as the residual-based Engle-Granger test. Due to the limited power and other problems with standard test procedures, the OLS-based autoregressive distributed lag (ARDL) approach to co-integration has grown in favor recently.

The unit root test section has shown that the time series variables considered in this research are a mixture of the I(0) and I(1) series. To utilize the co-integration test methodologies created by Johansen (1991; 1995) and Johansen-Juselius (1990), each the variables in the equation need to have the same degree of integration, I(0) or I(1). Therefore, these co-integration methodologies are not applicable to our investigation. As a result, this study uses the ARDL modeling technique of co-integration..

i. Interest rate, saving and investment

Among the main principles of financial liberalization is the notion that if interest rates were deregulated, the real interest rate would increase, encouraging saving and investment. To test this assertion, equation (3.1) is subjected to an empirical test.

The long-term results shown in Table 4.6 indicate that the real interest rate and the total amount of deposits held by banks are the major drivers of the total amount of credit granted by banks. According to the coefficient of LTBD 0.906663, which is highly significant at the 1% significance level, a unit increase in the total amount of deposits held by banks would result in an increase in the total amount of credit provided by banks of 0.9 billion birr. This is consistent with earlier research by Shrestha M. B. (2005) and Mohammad (2015) and indicates that banks created a lot of money for each unit of deposit.

According to the RIR coefficient-.0161618, which is highly significant at the 1% significance level, a unit increase in the real interest rate would result a 16.16million birr reduction in the total amount of credit provided by banks.

Table 4.6 ARDL (4, 4, 3, 2) Model Long Run Results

Regressand: LTBC

Regressor	**Coefficient**	**Standard error**	**t-ratio**	**p-value**	**95% conf. Interval**
a_0	.3636906	.7678542	0.47	0.646	-1.347195 2.074576
LTBD	.906663	.0301885	30.03	0.000***	.8393988 .9739271
RIR	-.0161618	.0035694	-4.53	0.001***	-.0241149 -.0082087
FLI	.2757376	.5160192	0.53	0.605	-.8740248 1.4255

The long-run association between FLI and LTBC (Total bank credit) is negative but statistically insignificant. The outcome shows that increasing levels of liberalization are not having the desired effects on investment.

Table 4.7 ARDL (4, 4, 3, 2) Model ECM Output

Regressand: LTBC

Regressor	**Coefficient**	**Standard error**	**t-ratio**	**p-value**	**95% conf. Interval**
$LTBC_1$	1.013214	.2480123	4.09	0.002***	.4606076 1.565819
$LTBC_2$	.0767333	.1939696	0.40	0.701	-.355458 .5089245
$LTBC_3$	.9516252	.2371798	4.01	0.002***	.4231557 1.480095
TBD_1	-.8292075	.3943953	-2.10	0.062*	-1.707975 .04956
TBD_2	.4287222	.391202	1.10	0.299	-.44293011.300374
TBD_3	-.0909055	.3450384	-0.26	0.798	-.859699.6778879
TBD_4	-.9095873	.2853188	-3.19	0.010***	-1.545317-.2738574
RIR_1	.015096	.0049022	3.08	0.012**	.0041732.0260188
RIR_2	.0090819	.0034493	2.63	0.025**	.0013965.0167674
RIR_3	.0052942	.0022429	2.36	0.040**	.0002967.0102918
FLI_1	-.3368967	.3822789	-0.88	0.399	-1.188667.5148738

FLI_2	.7584583	.2895874	2.62	0.026**	.11321751.403699
ECM_{t-1}	-1.014009	.3131809	-3.24	0.009***	-1.711819 -.3161984

ECMt-1's coefficient, which is -1.01400, is statistically significant at the 1% level. This demonstrates that the recovery process from a shock to the long-term equilibrium takes a full year. If the coefficient is 1, then any departure of the long-run equilibrium is fully recovered within a year. Additionally, the co-integration finding shows that bank credits from the prior year, bank deposits overall, the real interest rate, and financial liberalization all have an influence on the short-term loan provided by banks.

ii. Economic Growth and Industrial Development

Ethiopian financial liberalization ultimately aims to boost economic growth and industrial development. According to the coefficient of RIR.0754245, which is highly significant at the 1% significance level, a unit increase in real interest rate would result in an increase in the real gross domestic product by 75.4 million birr. These is because of people are encouraged to save more and borrow less as the real interest rate rises, which results in less money being spent on consumption and more money being saved. The economy has more savings accessible, which enables firms to borrow more money and increasing investment expenditure. Real GDP rises as a result of more investment spending and the result is consistent with Mehdi feizi and Mohammad, 2017.

Table 4.8 ARDL (3, 4, 1, 2) Model Long Run Results

Dependent Variable: LRGDP

Regressor	**Coefficient**	**Standard error**	**t-ratio**	**p-value**	**95% conf. Interval**
a_0	1.217645	1.594341	0.76	0.460	-2.256125 4.691415
RIR	.0754245	.0189762	3.97	0.002***	.0340789.1167701
FLI	3.412296	1.757727	1.94	0.076*	-.41746297.242055
LCDR	4.149693	1.072077	3.87	0.002***	1.8138396.485547

The CDR (credit deposit ratio) shows that holding other things constant in the long run a unit increases in CDR results in an increase of real GDP by 4.14 billion birr which is significant at 1%

significance rate. An increase in CDR is associated with more credits than money being held as a deposit, thereby more credit is offered and leads to more investment and growth in real GDP.

The coefficient of the FLI show that financial liberalization and real GDP has a positive relationship in the long run but it is insignificant at 5% significance level, this shows that financial liberalization is not stimulating real GDP as expected.

Table 4.9 ARDL (3, 4, 1, 2) Model ECM Outputs

Regressand: LRGDP

`Regressor	Coefficient	Standard error	t-ratio	p-value	95% conf. Interval
$LRGDP_1$	.3822131	.172833	2.21	0.047**	.0056424.7587838
$LRGDP_2$	.3235821	.1358899	2.38	0.035**	.0275035.6196607
RIR_1	-.0516665	.013138	-3.93	0.002***	-.0802918-.0230413
RIR_2	-.0403167	.0116856	-3.45	0.005***	-.0657775-.0148558
RIR_3	-.0340623	.0100091	-3.40	0.005***	-.0558703-.0122543
RIR_4	-.0410042	.0069718	-5.88	0.000***	-.0561945-.025814
FLI_1	-1.756466	1.105855	-1.59	0.138	-4.165917.6529862
$LCDR_1$	-1.130236	.8369391	-1.35	0.202	-2.953769.6932981
$LCDR_2$	-2.048099	.7432297	-2.76	0.017**	-3.667457-.4287406
ECM_{t-1}	-.6720052	.1374358	-4.89	0.000***	-.971452 -.3725584

The ARDL models ECM result above shows that the lags of real GDP positive effect in the short run and are statistically significant at 5% significance level. Lags of RIR and CDR both have a negative effect on real GDP at the short run and are statistically significant at 1% and 5% significance level respectively. The coefficient of FLI in both models show that financial liberalization is not stimulating the growth in real GDP as expected.

The ECM coefficient -.6720052 shows that 67 percent of short run disequilibrium converges back to the long run equilibrium in a year and it is statistically significant at 1% significance level.

To see the effect of financial liberalization on industrial development, the share of industry sector in the real GDP is taken as a dependent variable to figure out the effect.

From the result under Table 4.10 we can see that holding other things constant a unit increase in real lending rate the share of industry sector in real GDP decrease by 116 million and it is statistically significant at 5%significance rate.

Table 4.10 ARDL (2, 0, 0, 4) Model Long Run Results

Dependent Variable: LSISGDP

Regressor	Coefficient	Standard error	t-ratio	p-value	95% conf. Interval
a_0	-12.68502	3.192726	-3.97	0.001***	-19.42108 -5.948956
LTBC	.0864966	.1849113	0.47	0.646	-.303632.4766253
RLR	-.1160751	.0522365	-2.22	0.040**	-.2262844-.0058657
FLI	16.4045	5.644045	2.91	0.010***	4.49660628.31239

The percentage of the industry sector in real GDP is positively impacted by total bank lending, although this effect is statistically negligible over the long term. According to the financial liberalization index coefficient of 16.4045, the proportion of the industrial sector in real GDP rises by 16.4 billion birr for every unit increase in financial liberalization over the long term, and this gain is statistically significant at the 1% level of significance. Since they are statistically significant at the 1% level of significance, the ECM models also show that financial liberalization has an appealing impact on the proportion of the industry sector in real GDP in the near term.

The coefficient of real lending rate -.1160751 shows that for a unit increase in the real lending rate the share of industry sector in the real GDP decreases by 116 million birr and it is statistically significant at 5% significance level. This is due to a high lending rate increases the cost of borrowing and reduced borrowing result in less investment in the industry sector.

Table 4.11 ARDL (2, 0, 0, 4) Model ECM Outputs

Regressand: LSISGDP

Regressor	**Coefficient**	**Standard error**	**t-ratio**	**p-value**	**95% conf. Interval**
$LSISGDP_1$	-.2516131	.1648389	-1.53	0.145	-.5993927.0961665
FLI_1	-1.116738	1.258706	-0.89	0.387	-3.7723761.538901
FLI_2	-.061854	1.026707	-0.06	0.953	-2.2280152.104307
FLI_3	2.981732	.8294315	3.59	0.002***	1.2317854.73168
FLI_4	3.027893	.977779	3.10	0.007***	.96495995.090827
ECM_{t-1}	-.4129429	.1369633	-3.01	0.008***	-.7019102-.1239757

The findings of the financial liberalization's coefficients demonstrate that, in the short run, financial liberalization has a strong beneficial influence on the proportion of the industrial sector in real GDP. The ECM's coefficient, -0.4129429, indicates that it takes 41% of a year to bring the long-term equilibrium following a shock into equilibrium. Additionally, it is statistically significant at the 1% level.

iii. Poverty Reduction and Redistribution of Income

The financial sector has a crucial role in reducing poverty in a country. By having access to financial services like loans and savings accounts, individuals and small businesses may invest in their self and their communities. More money is made as a consequence, which eventually lowers poverty. Financial institutions can also work with government agencies and organizations to provide financial services and education to underserved populations. People are able to improve their overall financial well-being and make prudent financial decisions as a consequence. The financial sector, which is a significant player in efforts to decrease poverty, should continue to give financial inclusion and education initiatives top priority Shrestha M. B. (2005). To examine the impact of financial liberalization in Ethiopia on reducing poverty and income redistribution the following relationship has been examined.

Table 4.12 ARDL (1, 3, 3, 1) Model Long Run Outputs

Dependent Variable: LSBCTC

Regressor	**Coefficient**	**Standard error**	**t-ratio**	**p-value**	**95% conf. Interval**
a_0	4.556142	2.211592	2.06	0.057***	-.15775459.270039
RIR	.0477226	.0390611	1.22	0.241	-.0355342.1309793
APDPBB	-1.90e-06	3.71e-06	-0.51	0.615	-9.80e-066.00e-06
FLI	-1.920215	1.441364	-1.33	0.203	-4.992411.15198

From the above ARDL models we can conclude that average population density per bank branch and financial liberalization have negative impact on share of credit of banks to cooperative but both of them are insignificant in the short run. And RIR has a positive relationship with share of credit of banks to cooperatives and it is insignificant in the long run.

Table 4.13 ARDL (1, 3, 3, 1) Model ECM Outputs

Regressand: LSBCTC

Regressor	**Coefficient**	**Standard error**	**t-ratio**	**p-value**	**95% conf. Interval**
RIR_1	-.0436107	.0226682	-1.92	0.074*	-.0919268.0047055
RIR_2	-.0617607	.0205271	-3.01	0.009***	-.1055132-.0180082
RIR_3	-.0630365	.0130044	-4.85	0.000***	-.0907546-.0353183
$APDPBB_1$	-.0000508	.0000214	-2.37	0.031**	-.0000965-5.17e-06
$APDPBB_2$	-.000028	.0000175	-1.60	0.131	-.00006539.34e-06
$APDPBB_3$	.0000515	.0000181	2.84	0.012**	.0000129.0000901
FLI_1	3.85921	1.232984	3.13	0.007***	1.2311666.487254
ECM_{t-1}	-.8021793	.1678669	-4.78	0.000***	-1.159979-.4443794

From the short run results we can see that financial liberalization have a positive impact in reducing poverty and redistributing income. The real interest rate has negative impact in the short run and it is statistically significance at 1% significance level.

The ECMt-1 coefficient, which is at -.8021793, points to a quick return to the long-run equilibrium. At the 1% level, this finding is statistically significant. The outcome clearly says that each year after a short run shock, around 80% of the disequilibrium it caused is rectified.

iv. Financial stability

Theoretically, financial liberalization can improve financial stability by allowing for more efficient allocation of resources, diversification of risks, and greater access to financial services.

One of the premises behind financial liberalization is that stability can be achieved via the implementation of liberalization measures since the financial sector is unstable and susceptible to a repressed state. The following relationship is investigated in this context to see how financial liberalization affects financial stability.

Table 4.14 ARDL (1, 3, 3, 1) Model Long Run Outputs

Regressand: LCDR

Regressor	Coefficient	Standard error	t-ratio	p-value	95% conf. Interval
a_0	3.06381	.8494797	3.61	0.003***	1.2531874.874433
RLR	.0183569	.0078235	2.35	0.033**	.0016815.0350324
FLI	-2.142733	.4348519	-4.93	0.000***	-3.069597-1.215868
LFD	1.671475	.5690969	2.94	0.110***	.45847332.884476

Since high credit-deposit ratio shows high non-performing asset of banks this adversely affects the financial stability. Given this vantage point, the result presented above implies that the composite financial liberalization index shows for a unit increase in financial liberalization the CDR is reducing, there by the likelihood of financial instability is reduced and this result is consistent with the results of Shreshta (2005) and Mohammed (2016).

The coefficients of the real lending rate shows that for a unit increase in real lending rate the financial instability has been increasing and it is statistically significant. The effect of financial depth is insignificant in affecting financial stability in the long run.

Table 4.15 ARDL (1, 3, 3, 1) Model ECM Output

Regressand: LCDR

Regressor	Coefficient	Standard error	t-ratio	p-value	95% conf. Interval
RLR_1	-.0128666	.0029703	-4.33	0.001***	-.0191977-.0065355
FLI_1	.7686205	.3376548	2.28	0.038**	.04892631.488315
FLI_2	.5672057	.246841	2.30	0.036**	.04107661.093335
LFD_1	-2.266077	.3509084	-6.46	0.000***	-3.01402-1.518133
LFD_2	-1.178626	.2834804	-4.16	0.001***	-1.78285-.5744016
LFD_3	-.7399094	.2445273	-3.03	0.009***	-1.261107-.2187118
LFD_4	-.6865178	.2113979	-3.25	0.005***	-1.137102-.2359337
ECM_{t-1}	-.7002423	.172811	-4.05	0.001***	-1.06858-.3319043

At the 1% level, the coefficient ECMt-1 -.7002423 is statistically significant. According to this, there is a robust error correction process, and after a short-run shock, 70% of the divergence from the long-run equilibrium is fixed the next year.

CHAPTER FIVE: CONCLUSION AND RECOMMENDATION

5.1 Conclusion

The findings of the empirical tests indicate that Ethiopia's financial liberalizations have had a mixed influence. The following subsections explore the main results and their implications for policy.

5.1.1 Economic Growth and Industrial Development

The results of this study suggest that the real time total deposits held by commercial bank greatly affect the credits extended by banks. The credit extended by banks on the other hand shows a significant positive effect on the industrial development in the country. The highly positive significant relationship between the two variables indicate that the real time deposit held by banks positively affects the investment in the country through the credits extended by banks, there by economic growth in the country. This shows that the real time total deposits held by banks and credit extended by banks are positively increasing economic growth in Ethiopia. Therefore real time deposit should be kept high in order to increase credit extended by banks and to boost industrial development

Another finding of this study is that the real lending rate is the key determinant of the share of industry sector in real GDP. The negative relationship between them shows that as the cost of borrowing raises the investment in the industrial sector also decreases thereby has an impact in economic growth. This fact implies that the lending rate has to be kept reduced in order to increase the share of industry sector in the GDP of the country.

The real interest rate has a positive relationship with RGDP and negative relationship with the credit extended by banks, the negative relationship with the credit by banks shows that as the real cost of borrowing increase the credit by banks reduces, but the positive relationship with the real GDP shows that higher real interest rate attracts investment in the country, thereby promote economic growth in the country.

The study has found out that the credit deposit ratio of banks shows has a substantial positive effect on industrial development. As the ratio increases mean that more credit provided by banks, there will be an increase in investment in the industrial sector and rise in economic growth. But also the result finds that high credit deposit ratio is associated with financial instability the ratio has to go in line considering the possible financial instability due to high credit-deposit ratio.

The composite index of financial liberalization is positively correlated with bank credit extensions, real GDP, and industrial development. Results indicate that the increased accessibility of financial resources has promoted the formation of new investment projects in both the agricultural and non-agricultural sectors. As a result, it contributed to the growth of the country's economy. Increased investment in non-agricultural sectors has aided industrial growth, which may eventually have a long-term effect on economic growth. As a result, it can be said that Ethiopia's adoption of financial liberalization policies has helped to lessen its dependence on the agricultural sector and, as a consequence, has improved economic growth through the expansion of the industrial sector.

5.1.2 Redistribution of Income

The population density per bank branch is negatively correlated with the amount of bank credit given to the poor, and it is statistically insignificant, showing that an increase in bank branches is not helping the poorer segments of the population by supplying them with more financial resources.

However, it has been found that access to credit for the poor is negatively related to measures of financial liberalization as a whole. Because financial liberalization involves the removal of interest rate subsidies and the flexibility given to banks to extend credit to high-return projects, there is a reduction in the distribution of financial resources to the poor as a result of its implementation. Along with the implementation of financial liberalization measures, a second mechanism should be put in place to stop the drop in the availability of financial resources to the population's poorest segment.

5.1.3 Financial Stability

The findings of this study imply that the credit-deposit ratio of commercial banks has a positive relationship with financial liberalization. The credit-deposit ratio of a bank indicates what proportion of the deposits it collects from depositors is made available as loans to consumers or enterprises.Banks must invest the money placed so that they may earn a return that exceeds the interest they must pay on deposits since they are required to pay specific interest rates on time deposits. Paying interest to depositors while keeping their money in reserve entails keeping the money in reserve. As a result, banks often strive for a higher credit-to-deposit ratio.

On the other hand, a larger credit-deposit ratio is linked to both higher risk and higher return. The financial stability of a bank is severely impacted if a sizable amount of the credit it has granted is not repaid. If this problem is pervasive in the banking sector, then the entire financial system is unstable. A larger credit-deposit ratio thus leaves the financial system more exposed.

One of the primary elements that force the banks' credit-deposit ratio to be low in a period of financial depression is a high reserve requirement. Financial liberalizations result in a sharply lowered reserve requirement, which makes more money accessible for loans and raises the credit-deposit ratio, which is a sign of financial instability in the banking industry.
Thus, it is possible to claim that financial liberalization causes financial instability. An adequate mechanism should be developed and put into place simultaneously with the adoption of a financial liberalization strategy in order to prevent the financial system from becoming fragile.

5.2 RECOMMENDATION

From the results of the study the following recommendations have been drawn:

- The real time deposit should be kept high in order to increase credit extended by banks and to boost industrial development since the results of the study show the real time total deposits held by banks and credit extended by banks are positively increasing economic growth in Ethiopia.
- The lending rate has to be kept reduced in order to increase the share of industry sector in the GDP of the country since the negative relationship between them shows that as the cost of borrowing raises the investment in the industrial sector also decreases thereby has an impact in economic growth.
- As high credit deposit ratio is associated with financial instability the ratio has to go in line considering the possible financial instability due to high credit-deposit ratio.
- An adequate mechanism should be developed and put into place simultaneously with the adoption of a financial liberalization strategy in order to prevent the financial system from becoming fragile.
- Since credit for the poor is negatively related to measures of financial liberalization as a whole ,along with the implementation of financial liberalization measures, a second mechanism

should be put in place to stop the drop in the availability of financial resources to the population's poorest segment

- The composite index of financial liberalization is positively correlated with bank credit extensions, real GDP, and industrial development. Results indicate that the increased accessibility of financial resources has promoted the formation of new investment projects in both the agricultural and non-agricultural sectors. There for since it is positively contributing to the country's economic development more financial liberalization measures have to be taken.

5.3 Future Research Directions

There are certain concerns that this research was unable to cover. Future research should address these difficulties. The following subsections present the issues.

- Since liberalization is not a one-time policy action, it is envisaged that include additional policy variables that may have been deregulated at the time of the study will enhance the findings.
- Due to a lack of data on the rate of poverty at the necessary frequency or during the required time period, the study on the impact of financial liberalization on income redistribution, poverty reduction, and has been relatively indirect.It is important to perform in-depth research in this area using survey data and other potential methodologies.
- Utilizing the index, researchers may examine how financial liberalization affects important macroeconomic factors including taxation, imports, and exports.

5.4 Contribution of this Study

This study has made some significant contributions in the field. These contributions are discussed in the following subsections:

5.4.1 Overall Index of the Policy Measures

A summary index of the financial liberalization policy measures has been developed in this study, which also takes into account the partial policy measures. Previous studies failed to properly include this part. Most of the studies are found either to treat the partial financial liberalization as the full liberalization, or exclude the partial liberalization period by taking only the full liberalization date. This is misleading, especially during the impact evaluation.

5.4.2 An Aggregated Framework for the Impact Evaluation

This study has put forward an aggregated framework for the impact evaluation. This framework is useful not only for the impact evaluation of the financial liberalization, but also for the impact evaluation of each and every public policy. There are a large number of studies in the field of financial liberalization. Most of these studies focus on one or two aspects ofit and generalize the result for the overall policy implementation.

The impact evaluation of a policy or program is done in order to assess the effectiveness of that policy or the program. The inference drawn based on only partial aspects excluding other important ones may provide wrong information to the policy makers. Further, policies based on such information cannot bring expected result. In some cases unexpected negative impact may occur instead. Such a situation can be blamed for most of the public policy failures. Therefore, this study emphasizes on the study of the overall impact of the policy in an aggregated framework that includes all the three aspects, vis-a-vis-economic growth, redistribution of income and financial stability.

Reference

Aghion, P. and P. Bolton (1997), ”A Theory of Trickle-Down Growth and Development,” Review of Economic Studies, 64, (1997), 151-172.

Akpan, D. B. (2004). Financial Liberalization and Endogenous Growth: The Case of Nigeria. African Institute for Economic Development and Planning.

Akyuz, Y. (2014). Liberalization,Financial Instability and Economic Development. (J. G. Kevin Gallager, Ed.) Antem Press.

Demirgüç-Kunt, A., &Detragiache, E. (1998). Financial Liberalization and Financial Fragility,.IMF Working Paper 98/83.

Demirguc-Kunt, A., &Detragiache, E. (2001)."Financial Liberalization and Financial Fragility".In Gerald Caprio, Patrick Honohan and Joseph E. Stiglitz (Eds.), Financial Liberalization: How Far, How Fast? .

Demirgüç-Kunt, A., & Levine, R. (2008).Finance, financial sector policies, and long-run growth. . Journal of Economic Dynamics and Control, 21 (Working Paper, 4469,), 145-182.

Eichengreen, B. and P. Garber 1991. “Before the Accord: U.S. Monetary-Financial Policy1945-51,” in G. Hubbard ed., Financial Markets and Financial Crises, pp.175-206 (Chicago: University of Chicago Press).

Fry, M. J. (1980). Saving, Investment, Growth and the Cost of Financial Repression. World Development, 8 (1), 317-327.

Fry, M. J. (1988). Money, interest, and banking in economic development. Baltimore, MD, London: The Johns Hopkins University Press.

Fischer, S. (1998). Capital account liberalization and the role of the IMF.Princeton Essays on International Finance, 207.

Garedachew, W. (2011).Qualitative Analysis of the Sequence and Timing of Financial Liberalization in Ethiopia. Journal of Banking Financial Services and Insurance Research, 1(2), 64-75.

Girma, M. A. (2003). Financial Sector Liberalization in Developing Countries.eea.ethiopiaonline.net/Econ.foc/ef3-4/Abu.htm.

Greene, J., & Villanueva, D. (1991). Private Investment in Developing Countries: An Empirical Analysis. IMF Staff Papers, 38 (1), 33- 58.

Greenwood, J., &Jovanovic, B. (1990).Financial Development, Growth, and the Distribution of Income. Journal of Political Economy, 98 (5), 1076-1107.

McKinnon, R. (1973). Money and Capital in Economic Development. Washington DC: Brooking Institution.

McKinnon, R. (1989). Financial Liberalization and Economic Development: A Reassessment of Interest rate Policies in Asia and Latin America‟,(Vol. 5).

Mckinnon, R. (1991). The Order of Economic Liberalization. New York: John Hopkins University Press.

McKinnon, R. (1991). The Order of Economic Liberalization.Johns Hopkins Univ. Press.

NBE. (2021). Annual report for 2021/22, Addis Ababa.

Odhiambo, N. M. (2005). FINANCIAL LIBERALIZATION AND FINANCIAL DEEPENING: EVIDENCE FROM THREE SUB-SAHARAN AFRICAN (SSA) COUNTRIES. African Review of Money Finance and Banking, Rican Review of Money Finance and Banking, 5-23.

Odhiambo, N. M. (2008). Financial development in Kenya: a dynamic test of the Finance–led growth Hypothesis. Economic Issues, 13(2), 21–36.

Perron, Pierre (1988). "Trends and Random Walks in Macroeconomic Time Series: Further Evidence from a New Approach." Journal of Economic Dynamics and Control12: 297-332.

Perron, Pierre (1989). "The Great Crash,the Oil Price Shock, and the Unit Root Hypothesis." Econometrica57(6): 1361-1401.

Perron, Pierre (1997). "Further Evidence on Breaking Trend Functions in Macroeconomic Variables." Journal of Econometrics80: 355-385.

Perron, Pierre and Timothy J. Vogelsang (1992). "Nonstationary and Level Shifts with an Application to Purchasing Power Parity." Journal of Business and Economic Statistics10(3): 301-320.

Pesaran, M. Hasem and BahramPesaran (1997).Working with Microfit 4.0: Interactive Econometric Analysis. Oxford, Oxford University Press.

Pesaran, M. Hasem, and Yongcheol Shin (1999) "An Autoregressive Distributed Lag Modeling Approach to Cointegration Analysis". In S. Strom, A. Hollly, and P. Diamond (Eds.), Econometrics and Economic Theory in the 20th Century: The Ranger Frisch Centennial Symposium Cambridge, Cambridge University Press Available at: www.econ.cam.ac.uk/faculty/pesaran/ADL.pdf.

Pesaran, M. Hasem, Yongcheol Shin and Richard J. Smith (2001)."Bounds Testing Approaches to the Analysis of Level Relationships." Journal of Applied Econometrics16(3): 289-326.

Pesaran, H. M., & Shin, Y. (1999). An Autoregressive Distributed Lag Modeling Approach to Cointegration Analysis. In S. Strom, A. Hollly and P. Diamond (Eds.), Econometrics and Economic Theory in the 20th Century: The Ranger Frisch Centennial.

Raghuram G Rajan, Luigi Zingales, The great reversals: the politics of financial development in the twentieth century, Journal of Financial Economics, Volume 69, Issue 1, 2003, Pages 5-50

Reinhart, Carmen M. and Kenneth Rogoff. 2009. This Time is Different: Eight Hundred Centuries of Financial Folly. Princeton: Princeton University Press.

Shaw, E. S. (1973). Financial Deepening in Economic Development. New York: Oxford University Press.

Shrestha, M. B. (2005). Financial liberalization in Nepal. New south Wales, Australia: University of Wollongong.

Shrestha, M. B., &Chowdhury, K. (2007). IMPACT OF FINANCIAL LIBERALIZATION ON WELFARE:EVIDENCE FROM NEPAL. Applied Econometrics and International Development, 7 (1), 165-178.

Shaw, Edward S. (1973). Financial Deepening in Economic Development. New York, Oxford University Press.

Shleifer, Andrei (1998). "State versus Private Ownership." Journal of Economic Perspectives12: 133-150.

Shrestha, Min B. (2005). "ARDL Modelling Approach to Cointegration Test", Proceedings of the 46thConference of New Zealand Association of Economists 2005, Paper No. 13. Christchurch, New Zealand. www.nzae.org.nz/conferences/2005/13-SHRESTHA. PDF.pdf.

Shrestha, Min B. and KhorshedChowdhury (2005). "A Sequential Procedure for Testing Unit Roots in the Presence of Structural Break in Time Series Data: An Application to Nepalese Data 1970-2004." International Journal of Applied Econometrics and Quantitative Studies 2(2): 1-16.

Shrestha, Min B. and KhorshedChowdhury (2005)."ARDL Modelling Approach to Testing the Financial Liberalization Hypothesis." University of Wollongong, School of Economics and Information Systems, Working Paper No. 05-15. www.uow.edu.au/commerce/ econ/workingpapers/WP05-15.pdf.

Wang, X., & Huang, Y. (2011). Does Financial Repression Inhibit or Facilitate Economic Growth? A Case Study of Chinese Reform Experience. OXFORD BULLETIN OF ECONOMICS AND STATISTICS, 73, 6 (2011) 0305-9049 , 833-855.

Van Wijnbergen, S. (1983). Credit Policy, Inflation and Growth in a Financially Repressed Economy. Journal of Development Economics, 13, 45-65

APPENDIX A

Computation of the Financial Liberalization Policy Variables

Interest Rate Liberalization

In coding this measure, deposit rates and lending rates are considered separately in order to examine the type of regulations for each set of rates. They are categorized as being government set or subject to a regulatory ceiling (code=0), fluctuating within a band (code=1) or freely floating (code=2). The code is based on the following description:

FL= fully liberalized is when:-

Both deposit interest rates and lending interest rates are determined at market rates coded as [2, 2]

LL = largely Liberalized is when:-

Either deposit rates or lending rates are freed but the other rates are subject to band or only a part of interest rates are determined at market rates, coded as [2, 1]

PR= partially repressed is when: -

Either deposit rates or lending rates are freed but the other interest rates are set by government or subject to ceiling/floor, coded as [2, 0]

Deposit rates and lending rates are subject to band or partially liberalized, coded as [1, 1]

Either deposit rates or lending rates are subject to band or partially liberalized, coded as [1, 0]

FR = fully repressed is when:-

The government sets the lending and deposit rates, or when they are both subject to a regulatory ceiling (code = 0), fluctuating within a band (code = 1), and freely floating (code=2).

Table A.1: Major liberalization measures on interest Rate during the Study Period

Year	Liberalization Measures on Interest Rate
1995	Setting ceiling and floor interest rate for lending and deposit
1998	Liberalization of lending rate
2001	Minimum interest rate reduced from 6 percent to 3 percent
2005	Minimum interest rate raised from 3 percent to 4 percent
2010	Deposit interest rate fully liberalized except 5 percent interest rate ceiling for saving and time deposit Directives №NBE/INT/2010
2017	Deposit interest rate fully liberalized except 7 percent interest rate ceiling for saving and time deposit Directives №NBE/INT/12/2017

Source: (Kahsay, 2014) citing (Gardachew, 2012) and Authors compilation from NBE proclamations and Directives.

Based on the measures Described Above in Table A.1 the following index has been computed.

Year	IRD	IRD %
1992	0	0
1993	0	0
1994	0	0
1995	0	0
1996	0	0
1997	0	0
1998	1	0.66
1999	1	0.66
2000	1	0.66
2001	1	0.66
2002	1	0.66
2003	1	0.66
2004	1	0.66
2005	1	0.66
2006	1	0.66
2007	1	0.66
2008	1	0.66
2009	1	0.66

2010	1	0.66
2011	1	0.66
2012	1	0.66
2013	1	0.66
2014	1	0.66
2015	1	0.66
2016	1	0.66
2017	1	0.66
2018	1	0.66
2019	1	0.66
2020	1	0.66
2021	1	0.66
2022	1	0.66

Removal of Banking Sector Entry

1) How far does the government allow foreign banks to join the local market? This question is coded to analyze if a country permits foreign banks to enter a local market, whether foreign bank branching limitations are loosened, and to what extent nonresidents can possess equity in domestic banks.

- When foreign banks are not permitted to enter or when there are strong limitations on new foreign bank openings, coded as 0.
- When foreign bank entrance is permitted, but nonresidents are required to own less than 50% of the stock, coded as 1.
- When foreign banks are given the same status as local banks, when foreign banks are permitted to open an unlimited number of branches, or when nonresidents are permitted to acquire a majority of the stock in domestic banks, Coded as 2

2) Does the government allow the entry of new domestic banks?

- When the entry of new domestic banks is not allowed or strictly regulated, coded as 0.
- When the entry of new domestic banks or other financial institutions is allowed into the domestic market, coded as 1

3) Do branches have any limitations? (0/1)

- When branching restrictions are in place, coded as 0.
- When there are no branching restrictions or if restrictions are eased, coded as 1.

4) Do banks get permission from the government to participate in a variety of activities?

- When the range of activities that banks can take consists of only banking activities, coded as 0.
- When banks are allowed to become universal banks,coded as 1

Table A.2. Indicate when the measures to liberalize banking entry were implemented.

Year	Liberalization Measures on Banking Entry
1994	Licensing and Supervision of banking Business Proclamation №. 84/1994,enacted

Source: (Kahsay, 2014) citing (Gardachew, 2012) and Authors compilation from NBE proclamations and Directives.

The following table 22 has been calculated using the previously mentioned parameters and the information in table 21.

Table A.3 Adjustment of the banking entry's coding rule

Year	Foreign bank entry	New domestic banks entry	Restriction on branching	Restriction on range of activities of banks	Removal of entry barriers	Removal of entry barriers in %
1992	0	0	0	0	0	0
1993	0	0	0	0	0	0
1994	0	1	1	0	2	0.5
1995	0	1	1	0	2	0.5
1996	0	1	1	0	2	0.5
1997	0	1	1	0	2	0.5
1998	0	1	1	0	2	0.5
1999	0	1	1	0	2	0.5
2000	0	1	1	0	2	0.5
2001	0	1	1	0	2	0.5
2002	0	1	1	0	2	0.5
2003	0	1	1	0	2	0.5
2004	0	1	1	0	2	0.5
2005	0	1	1	0	2	0.5
2006	0	1	1	0	2	0.5
2007	0	1	1	0	2	0.5

2008	0	1	1	0	2	0.5
2009	0	1	1	0	2	0.5
2010	0	1	1	0	2	0.5
2011	0	1	1	0	2	0.5
2012	0	1	1	0	2	0.5
2013	0	1	1	0	2	0.5
2014	0	1	1	0	2	0.5
2015	0	1	1	0	2	0.5
2016	0	1	1	0	2	0.5
2017	0	1	1	0	2	0.5
2018	0	1	1	0	2	0.5
2019	0	1	1	0	2	0.5
2020	0	1	1	0	2	0.5
2021	0	1	1	0	2	0.5
2022	0	1	1	0	2	0.5

Table A.4. The criterion for the conversion of the REB value

Status of theLiberalization	Value base on code	Values converted to REB in %
Fully Liberalized	4	100%
Largely Liberalized	3	75%
Partially Repressed	1 or 2	25%-50%
Fully Repressed	0	0

Note the foregoing Table 23's conversion criteria were used to convert the REB value in Table 22.

Reduction on Reserve Requirement

1) Are reserve requirements restrictive?

- ✓ Coded as 0 if reserve requirement is more than 20 percent.
- ✓ Coded as 1 if reserve requirements are reduced to 10–20 percent or complicated regulations to set reserve requirements are simplified as a step toward reducing reserve requirements
- ✓ Coded as 2 if reserve requirements are less than 10 percent.

Table A.5 Liberalization Measures Reduction of Reserve Requirement

Year	Liberalization Measures on Reduction of Reserve Requirement
1995	SBB/6/1995 Reserve requirement of 5% of all birr and foreign currency deposit liability held in the form of Demand (current) deposits saving Deposit and time deposit
1996	SBB/14/1996 Reserve requirement of 5% of all birr and foreign currency deposit liability held in the form of Demand (current) deposits saving Deposit and time deposit
2007	SBB/42/2007 Reserve requirement of 10% of all birr and foreign currency deposit liability held in the form of Demand (current) deposits saving Deposit and time deposit
2008	SBB/45/2008 R0eserve requirement of 15% of all birr and foreign currency deposit liability held in the form of Demand (current) deposits saving Deposit and time deposit
2012	SBB/46/2012 Reserve requirement of 10% of all birr and foreign currency deposit liability held in the form of Demand (current) deposits saving Deposit and time deposit
2013	SBB/55/2013 Reserve requirement of 5% of all birr and foreign currency deposit liability held in the form of Demand (current) deposits saving Deposit and time deposit
2021	SBB/80/2021 Reserve requirement of 10% of all birr and foreign currency deposit liability held in the form of Demand (current) deposits saving Deposit and time deposit
2022	SBB/84/2022 Reserve requirement of 7% of all birr and foreign currency deposit liability held in the form of Demand (current) deposits saving Deposit and time deposit

Source: Authors compilation from NB E proclamations and Directives.

Year	RRR	RRR%
1992	0	0
1993	0	0
1994	0	0
1995	2	1
1996	2	1
1997	2	1
1998	2	1

1999	2	1
2000	2	1
2001	2	1
2002	2	1
2003	2	1
2004	2	1
2005	2	1
2006	2	1
2007	1	0.5
2008	1	0.5
2009	1	0.5
2010	1	0.5
2011	1	0.5
2012	1	0.5
2013	2	1
2014	2	1
2015	2	1
2016	2	1
2017	2	1
2018	2	1
2019	2	1
2020	2	1
2021	1	0.5
2022	2	1

Table A.6: The criteria used to convert the RRR value

Status of the liberalization	Value base oncode	Values converted to RRRin %
Fully Liberalized	2	100%
Partially Liberalized	1	50%
Fully Repressed	0	0%

Note that the RRR number from Table 25 above has been transformed using the criteria in Table 26.

External Account Transactions

1) Is the exchange rate system unified? (0/1)

- When a special exchange rate regime for either capital or current account transactions exists, coded as 0.
- When the exchange rate system is unified, coded as 1.

2) Does a country set restrictions on capital inflow? (0/1)

- When significant restrictions exist on capital inflows, coded as 0.
- When banks are allowed to borrow from abroad freely without restrictions and there are no tight restrictions on other capital inflows, coded as 1.

3) Does a country set restrictions on capital outflow? (0/1)

- When restrictions exist on capital outflows, coded as 0.
- When capital outflows are allowed to flow freely or with minimal approval restrictions, coded as 1.

By adding these three items, Fully Liberalized = [3], Largely Liberalized = [2], Partially Repressed = [1], Fully Repressed= [0]

Table A.7: Liberalization Measures on External Account

Year	Liberalization Measures on External Account
1992	Devaluation ETB by 141 percent against USD
1993	Auction based foreign exchange rate system introduced
1998	Current account fully liberalized Establishment of interbank foreign exchange market and interbank money market

Source: (Kahsa, 2014) citing (Gardache w, 2012) and Authors compilation from NB E proclamations and Directives

Year	**Exchange rate unified**	**Restriction on capital outflow**	**Restriction on capital inflow**	**EAL**	**EAL in %**

1992	0	0	0	0	0
1993	1	0	0	1	0.33
1994	1	0	0	1	0.33
1995	1	0	0	1	0.33
1996	1	0	0	1	0.33
1997	1	0	0	1	0.33
1998	1	0	1	2	0.66
1999	1	0	1	2	0.66
2000	1	0	1	2	0.66
2001	1	0	1	2	0.66
2002	1	0	1	2	0.66
2003	1	0	1	2	0.66
2004	1	0	1	2	0.66
2005	1	0	1	2	0.66
2006	1	0	1	2	0.66
2007	1	0	1	2	0.66
2008	1	0	1	2	0.66
2009	1	0	1	2	0.66
2010	1	0	1	2	0.66
2011	1	0	1	2	0.66
2012	1	0	1	2	0.66
2013	1	0	1	2	0.66
2014	1	0	1	2	0.66
2015	1	0	1	2	0.66
2016	1	0	1	2	0.66
2017	1	0	1	2	0.66
2018	1	0	1	2	0.66
2019	1	0	1	2	0.66
2020	1	0	1	2	0.66
2021	1	0	1	2	0.66
2022	1	0	1	2	0.66

Table A.9: The conventional method for converting the EAL value

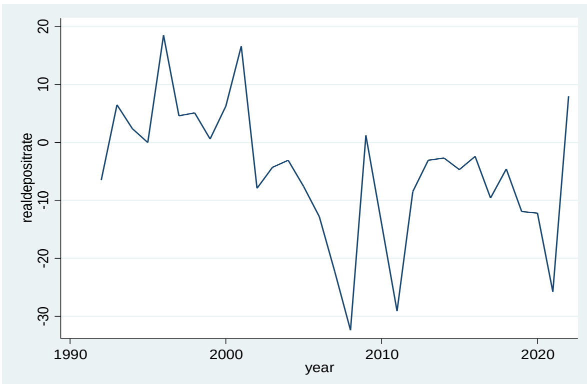
Status of the liberalization	Value base on code	Values converted to EALin %

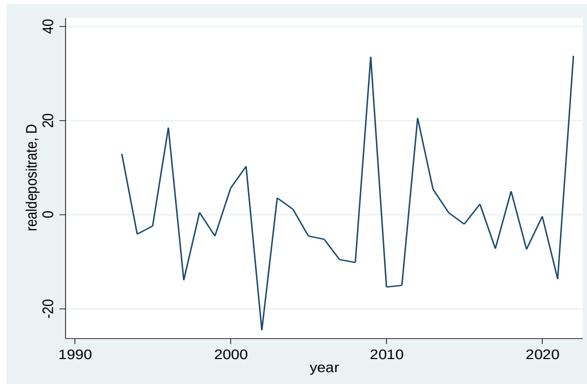
Fully Liberalized	3	100%
Largely Liberalized	2	66%
Partially Repressed	1	33%
Fully Repressed	0	0%

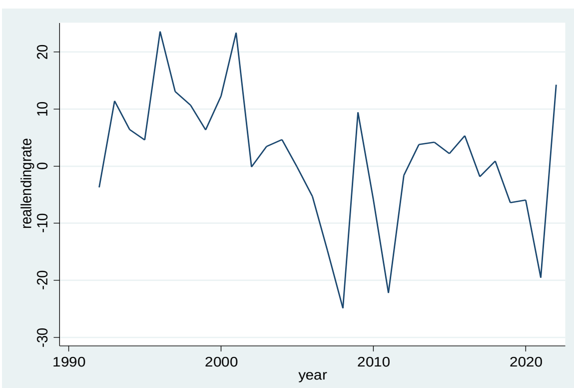
Note that the above scenario creates a conflicting idea that the External account feature for that reason as independent referee (Bascom, 1994) definition as well as the previous computation of (Shrestha M. B., 2005) has been referred and used in this case.

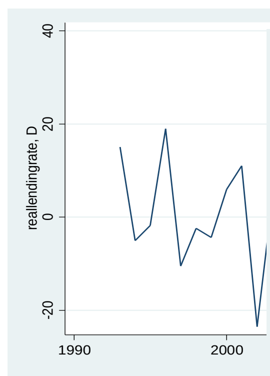
APPENDIX B

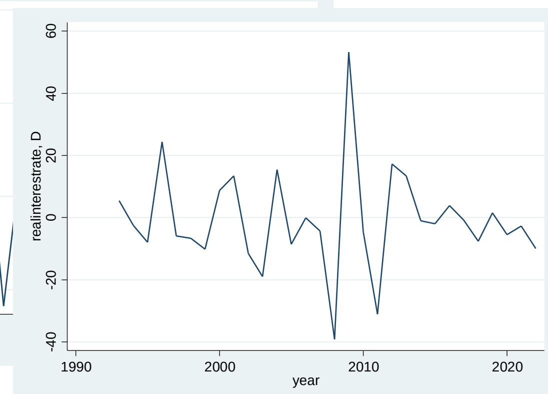
GRAPH OF THE VARIABLES

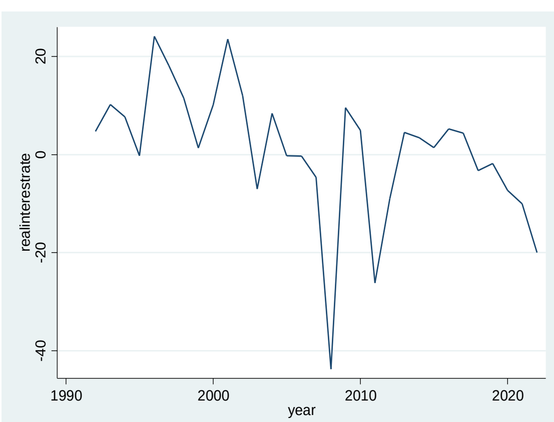


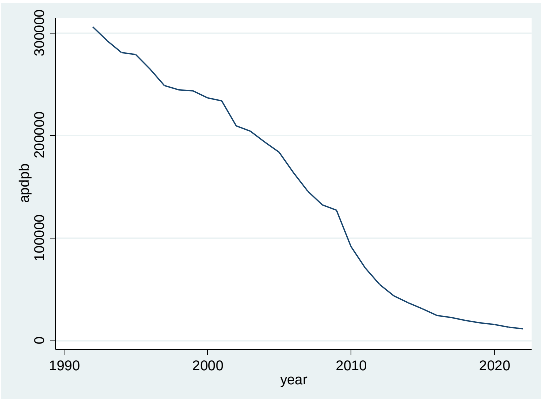


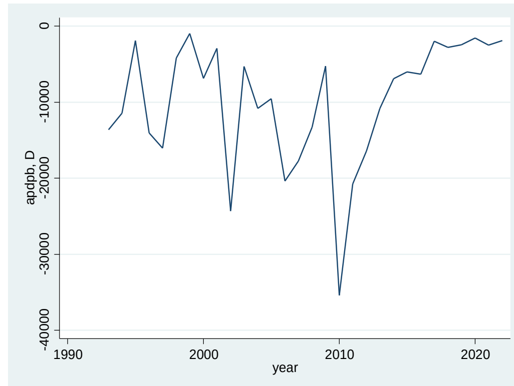


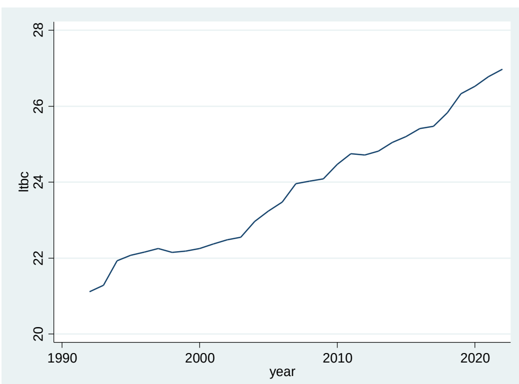


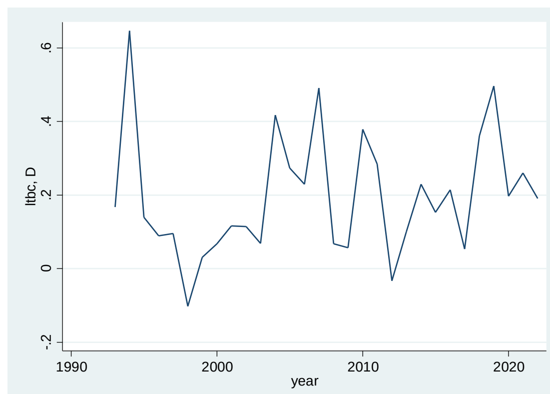


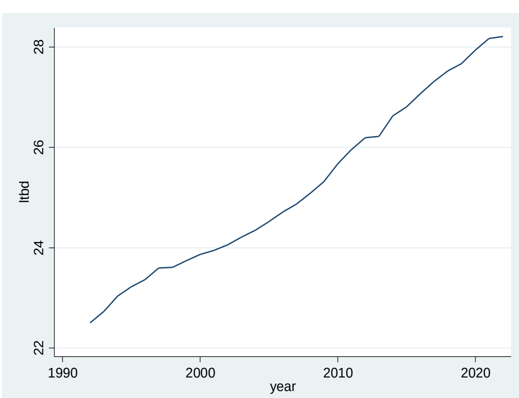


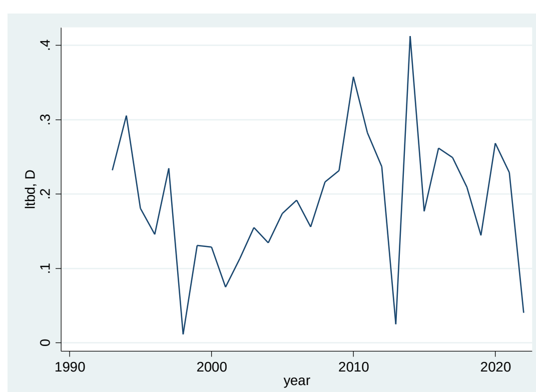

apdpb
300000
200000
100000
0
1990
2000
2010
2020
year

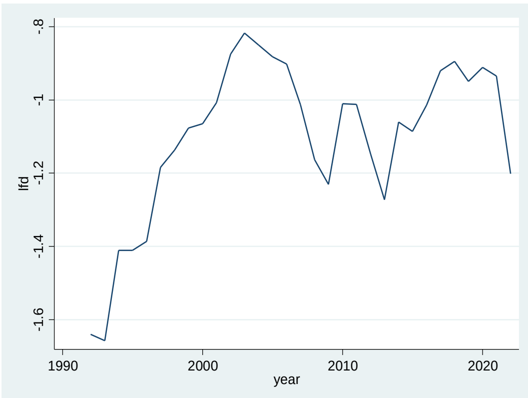

apdpb, D
0
-10000
-20000
-30000
-40000
1990
2000
2010
2020
year

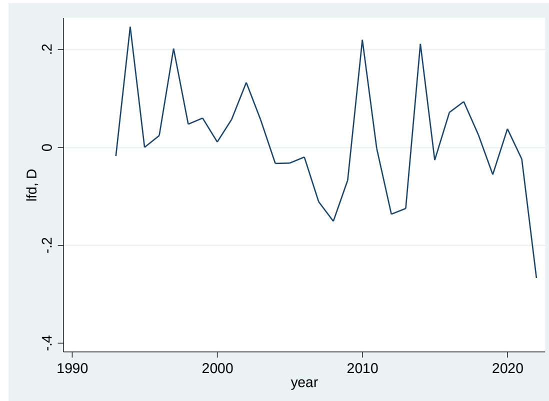

ltbc
28
26
24
22
20
1990
2000
2010
2020
year

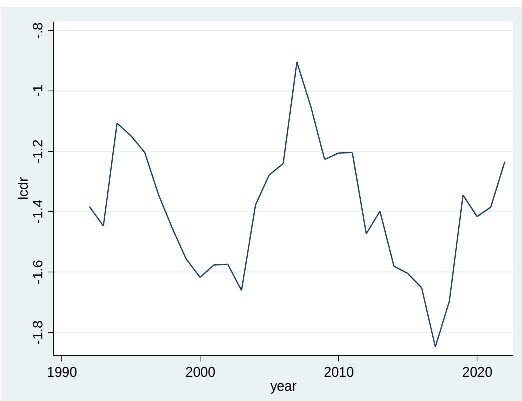

ltbc, D
.6
.4
.2
0
-.2
1990
2000
2010
2020
year

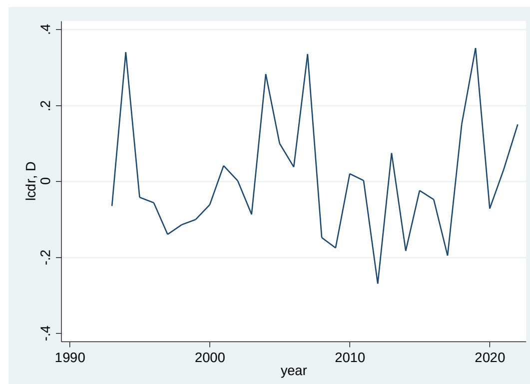

ltbd
28
26
24
22
1990
2000
2010
2020
year

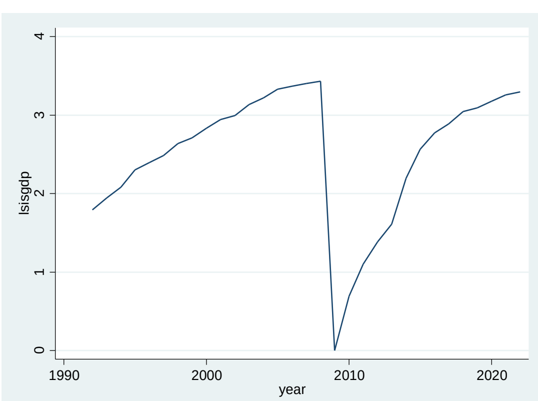

ltbd, D
.4
.3
.2
.1
0
1990
2000
2010
2020
year

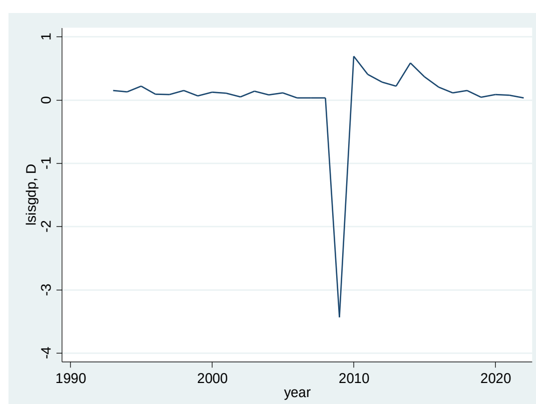

lfd
-.8
-1
-1.2
-1.4
-1.6
1990
2000
2010
2020
year

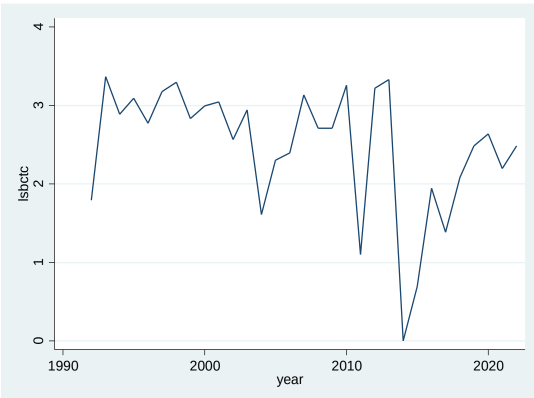
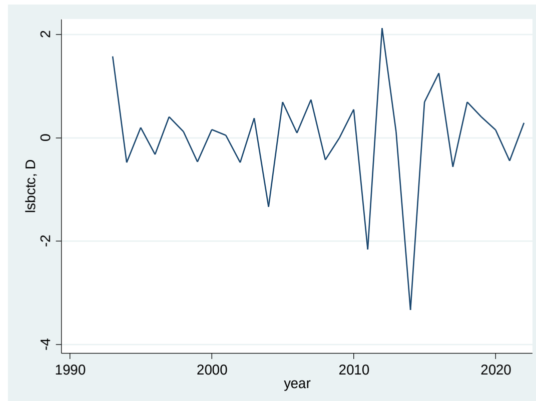
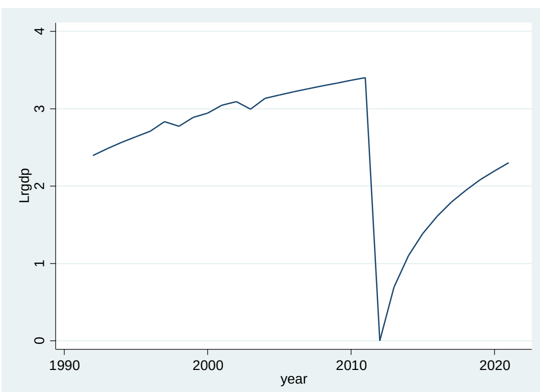
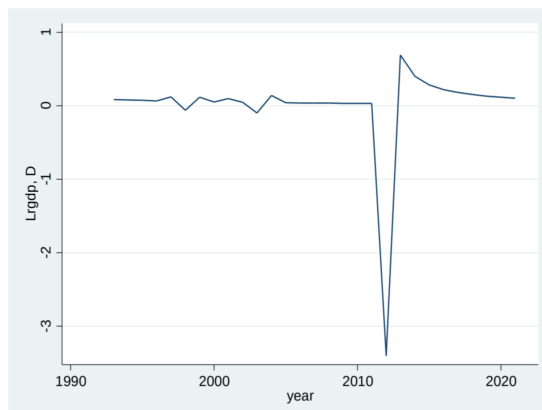
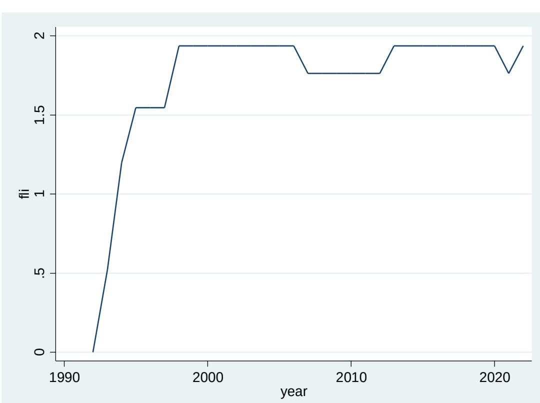
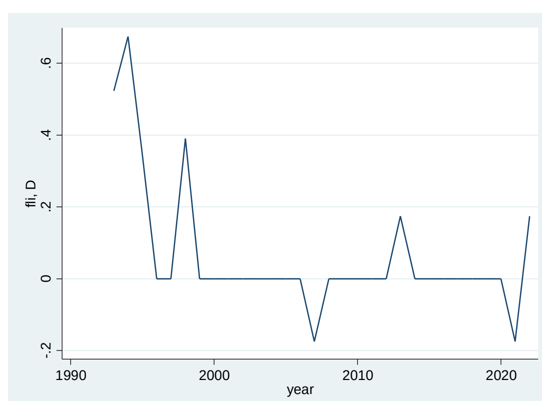

lfd, D
.2
0
-.2
-.4
1990
2000
2010
2020
year


lcdr
-.8
-1
-1.2
-1.4
-1.6
-1.8
1990
2000
2010
2020
year


lcdr, D
.4
.2
0
-.2
-.4
1990
2000
2010
2020
year


lsisgdp
4
3
2
1
0
1990
2000
2010
2020
year


lsisgdp, D
1
0
-1
-2
-3
-4
1990
2000
2010
2020
year


lsbctc
year

lsbctc, D
year

Lrgdp
year

Lrgdp, D
year

fii
year

fii, D
year

APPENDIX C

STATISTICS OF THE ARDL MODELS

i. Interest rate, saving and investment

A. Key regression statistics

R^2	**0.8539**
Durbin Watson statistic	**2.049698**
F-statistic value	**458.11(0.00000)**

B. Diagnostic test

Breusch-Godfrey LM test for autocorrelation

lags(*p*)	chi2	df	Prob > chi2
1	0.362	1	0.5471

H0: no serial correlation

```
White's test for Ho: homoskedasticity
         against Ha: unrestricted heteroskedasticity

         chi2(26)     =     27.00
         Prob > chi2  =    0.4093
```

Cameron & Trivedi's decomposition of IM-test

Source	chi2	df	p
Heteroskedasticity	27.00	26	0.4093
Skewness	18.72	16	0.2834
Kurtosis	0.18	1	0.6700
Total	45.90	43	0.3528

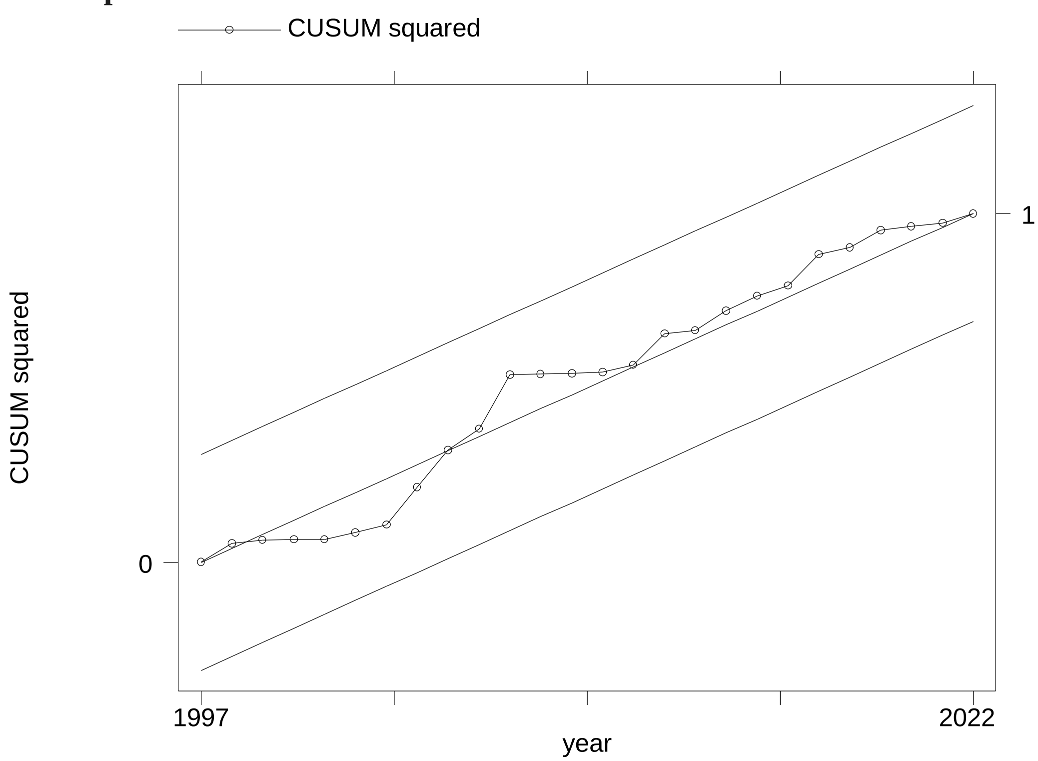
```
Pesaran/Shin/Smith (2001) ARDL Bounds Test
H0: no levels relationship              F =  5.327
                                        t = -3.238

Critical Values (0.1-0.01), F-statistic, Case 3
```

	[I_0] L_1	[I_1] L_1	[I_0] L_05	[I_1] L_05	[I_0] L_025	[I_1] L_025	[I_0] L_01	[I_1] L_01
k_3	2.72	3.77	3.23	4.35	3.69	4.89	4.29	5.61

```
accept if F < critical value for I(0) regressors
reject if F > critical value for I(1) regressors
```

C. Cusum plot



The straight lines represent critical bounds at 5% significance level

ii. Economic Growth and Industrial Development

a. Key regression statistics

R^2	**0.9231**

Durbin Watson statistic	**1.741588**
F-statistic value	**11.08(0.000001)**

b. Diagnostic test

```
. estat bgodfrey

Breusch-Godfrey LM test for autocorrelation
```

lags(*p*)	chi2	df	Prob > chi2
1	0.258	1	0.6114

```
H0: no serial correlation
```

```
White's test for Ho: homoskedasticity
         against Ha: unrestricted heteroskedasticity

         chi2(25)     =     26.00
         Prob > chi2  =    0.4076

Cameron & Trivedi's decomposition of IM-test
```

Source	chi2	df	p
Heteroskedasticity	26.00	25	0.4076
Skewness	5.73	13	0.9555
Kurtosis	0.14	1	0.7068
Total	31.87	39	0.7840

Pesaran/Shin/Smith (2001) ARDL Bounds Test

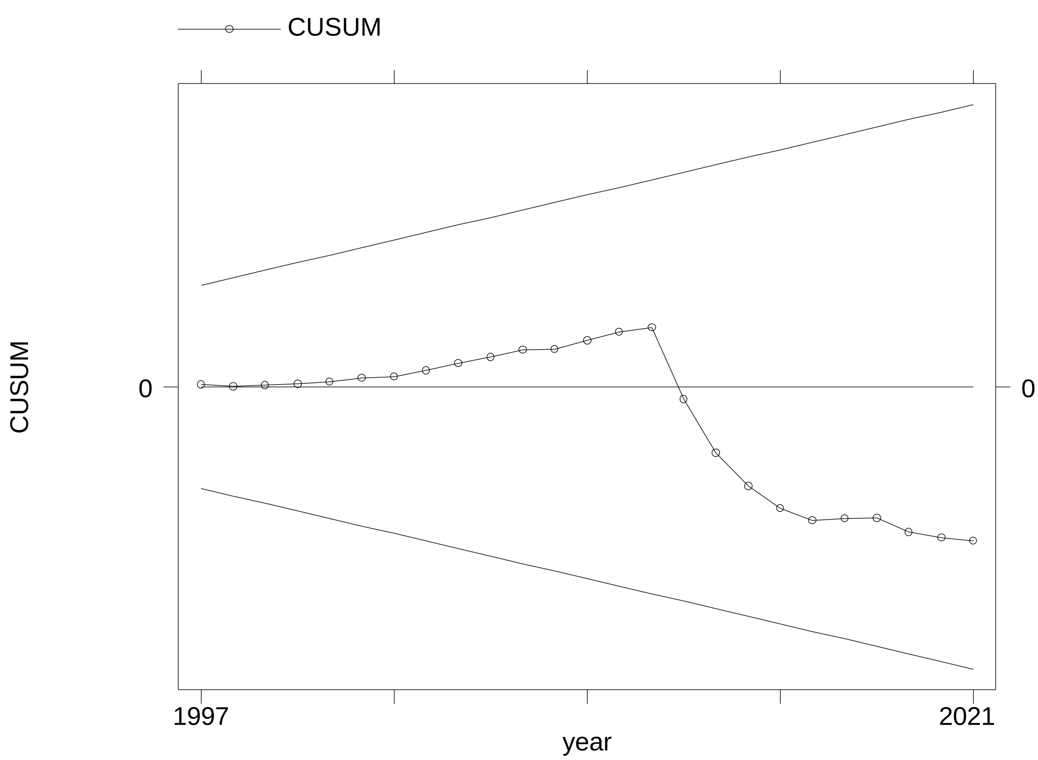
```
H0: no levels relationship              F =  7.530
                                        t = -4.890
```

Critical Values (0.1-0.01), **F-statistic**, Case 3

	[I_0] L_1	[I_1] L_1	[I_0] L_05	[I_1] L_05	[I_0] L_025	[I_1] L_025	[I_0] L_01	[I_1] L_01
k_3	2.72	3.77	3.23	4.35	3.69	4.89	4.29	5.61

accept if F < critical value for I(0) regressors
reject if F > critical value for I(1) regressors

c. Cusum plot



The straight lines represent critical bounds at 5% significance level

A. Key regression statistics

R^2	**0.7034**
Durbin Watson statistic	**1.901661**
F-statistic value	**8.03(0.00001)**

B. Diagnostic test

Breusch-Godfrey LM test for autocorrelation

lags(*p*)	chi2	df	Prob > chi2
1	0.283	1	0.5945

H0: no serial correlation

```
White's test for Ho: homoskedasticity
         against Ha: unrestricted heteroskedasticity

         chi2(26)     =     27.00
         Prob > chi2  =    0.4093
```

Cameron & Trivedi's decomposition of IM-test

Source	chi2	df	p
Heteroskedasticity	27.00	26	0.4093
Skewness	19.90	9	0.0185
Kurtosis	1.86	1	0.1722
Total	48.77	36	0.0759

Pesaran/Shin/Smith (2001) ARDL Bounds Test

H0: no levels relationship F = 8.538

t = -3.015

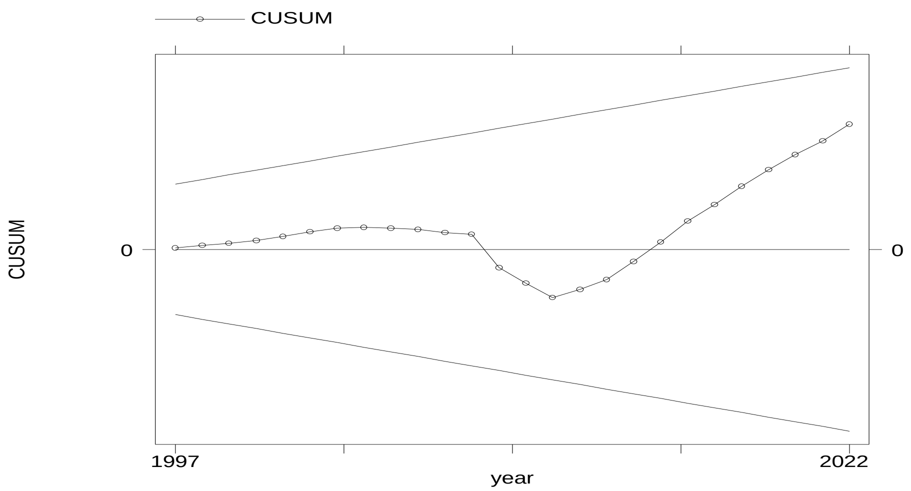
Critical Values (0.1-0.01), **F-statistic**, Case 3

	[I_0] L_1	[I_1] L_1	[I_0] L_05	[I_1] L_05	[I_0] L_025	[I_1] L_025	[I_0] L_01	[I_1] L_01
k_3	2.72	3.77	3.23	4.35	3.69	4.89	4.29	5.61

accept if F < critical value for I(0) regressors

reject if F > critical value for I(1) regressors

C. Cusum plot



The straight lines represent critical bounds at 5% significance level

iii. Poverty Reduction and Redistribution of Income

A. Key regression statistics

R^2	**0.8483**
Durbin Watson statistic	**1.7714**
F-statistic value	**4.55(0.00039)**

B. Diagnostic test

Breusch-Godfrey LM test for autocorrelation

lags(*p*)	chi2	df	Prob > chi2
1	0.345	1	0.5571

H0: no serial correlation

```
White's test for Ho: homoskedasticity
         against Ha: unrestricted heteroskedasticity

         chi2(26)      =     27.00
         Prob > chi2   =    0.4093

Cameron & Trivedi's decomposition of IM-test
```

Source	chi2	df	p
Heteroskedasticity	27.00	26	0.4093
Skewness	13.62	11	0.2545
Kurtosis	0.83	1	0.3610
Total	41.46	38	0.3223

Pesaran/Shin/Smith (2001) ARDL Bounds Test

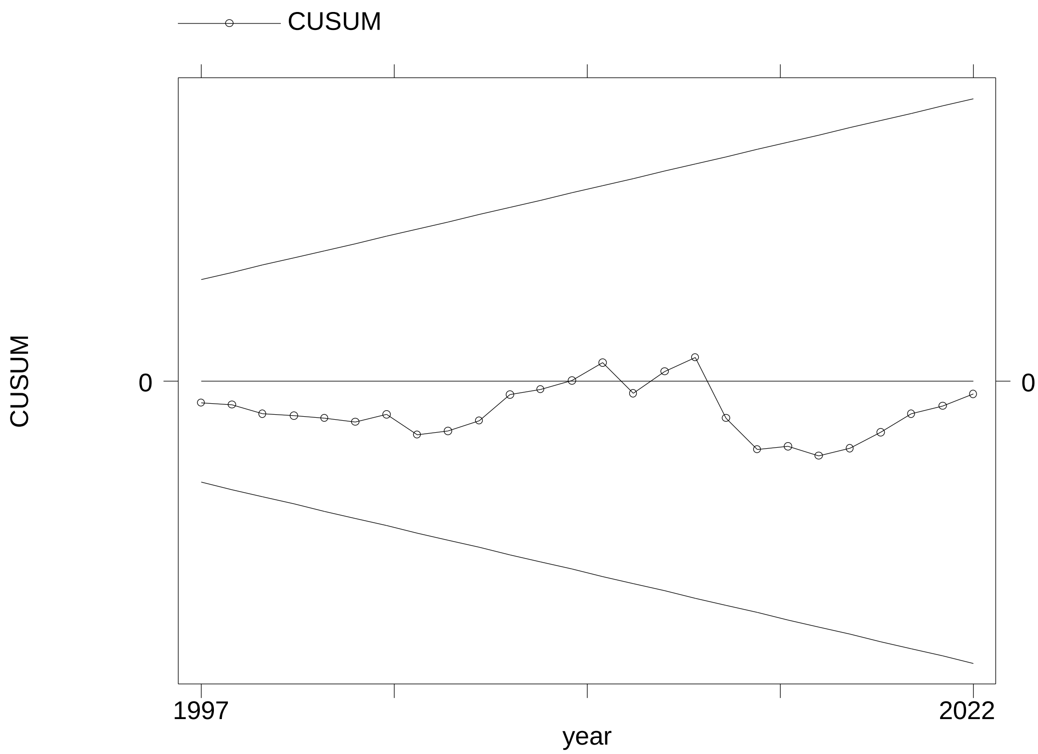
```
H0: no levels relationship            F =  11.108
                                      t = -4.779
```

Critical Values (0.1-0.01), **F-statistic**, Case 3

	[I_0] L_1	[I_1] L_1	[I_0] L_05	[I_1] L_05	[I_0] L_025	[I_1] L_025	[I_0] L_01	[I_1] L_01
k_3	2.72	3.77	3.23	4.35	3.69	4.89	4.29	5.61

accept if F < critical value for I(0) regressors
reject if F > critical value for I(1) regressors

C. Cusum plot



The straight lines represent critical bounds at 5% significance level

iv. Financial stability

A. Key regression statistics

R^2	**0.8089**
Durbin Watson statistic	**2.283408**
F-statistic value	**12.23(0.00000)**

B. Diagnostic test

Breusch-Godfrey LM test for autocorrelation

lags(*p*)	chi2	df	Prob > chi2
1	0.839	1	0.3596

H0: no serial correlation

```
White's test for Ho: homoskedasticity
         against Ha: unrestricted heteroskedasticity

         chi2(26)     =    27.00
         Prob > chi2  =   0.4093
```

Cameron & Trivedi's decomposition of IM-test

Source	chi2	df	p
Heteroskedasticity	27.00	26	0.4093
Skewness	10.71	11	0.4678
Kurtosis	0.65	1	0.4199
Total	38.36	38	0.4531

Pesaran/Shin/Smith (2001) ARDL Bounds Test

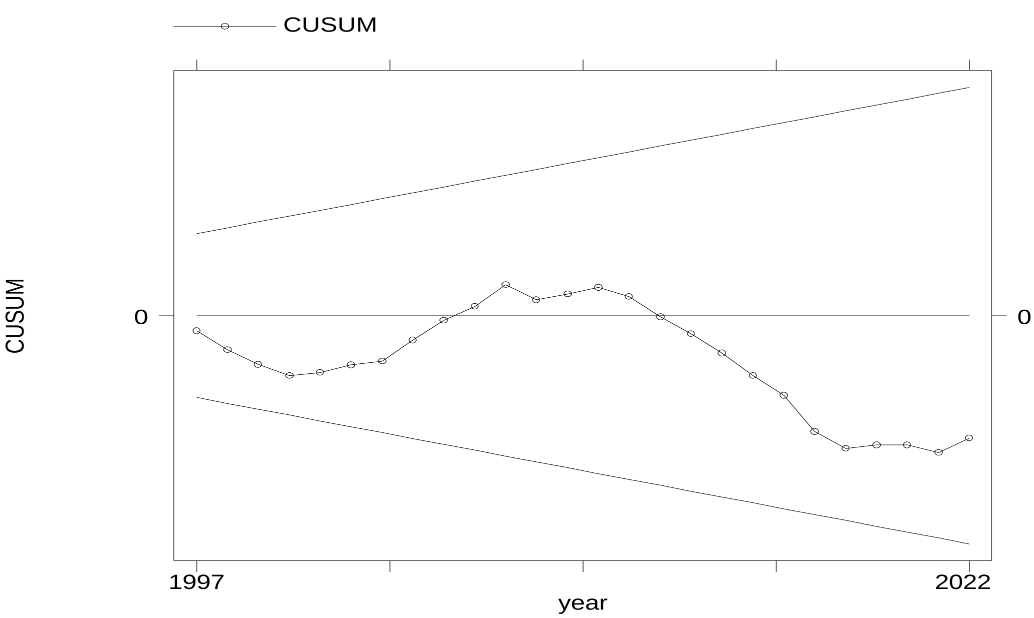
```
H0: no levels relationship            F =  11.207
                                      t = -4.052
```

Critical Values (0.1-0.01), **F-statistic**, Case 3

	[I_0] L_1	[I_1] L_1	[I_0] L_05	[I_1] L_05	[I_0] L_025	[I_1] L_025	[I_0] L_01	[I_1] L_01
k_3	2.72	3.77	3.23	4.35	3.69	4.89	4.29	5.61

accept if F < critical value for I(0) regressors
reject if F > critical value for I(1) regressors

C. Cusum plot



The straight lines represent critical bounds at 5% significance level